

A CHILTON

PUBLICATION

The Iron Age

NATIONAL METALWORKING WEEKLY

May 3, 1951

ENTS PAGE 2

UNIV. OF MICHIGAN

MAY 3 1951

EAST ENGINEERING
LIBRARY

in
Essential
Civilian Goods

in
Defense Orders

PRE-COATED

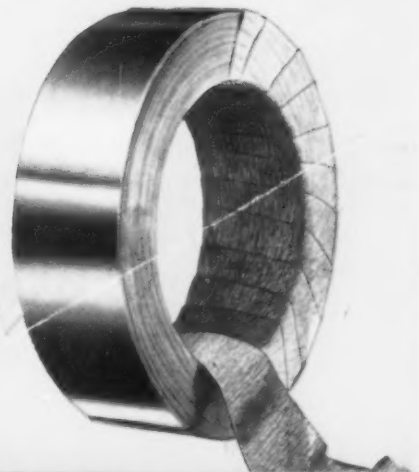
Thomas Ship



Helps Conserve CRITICAL SOLID METALS

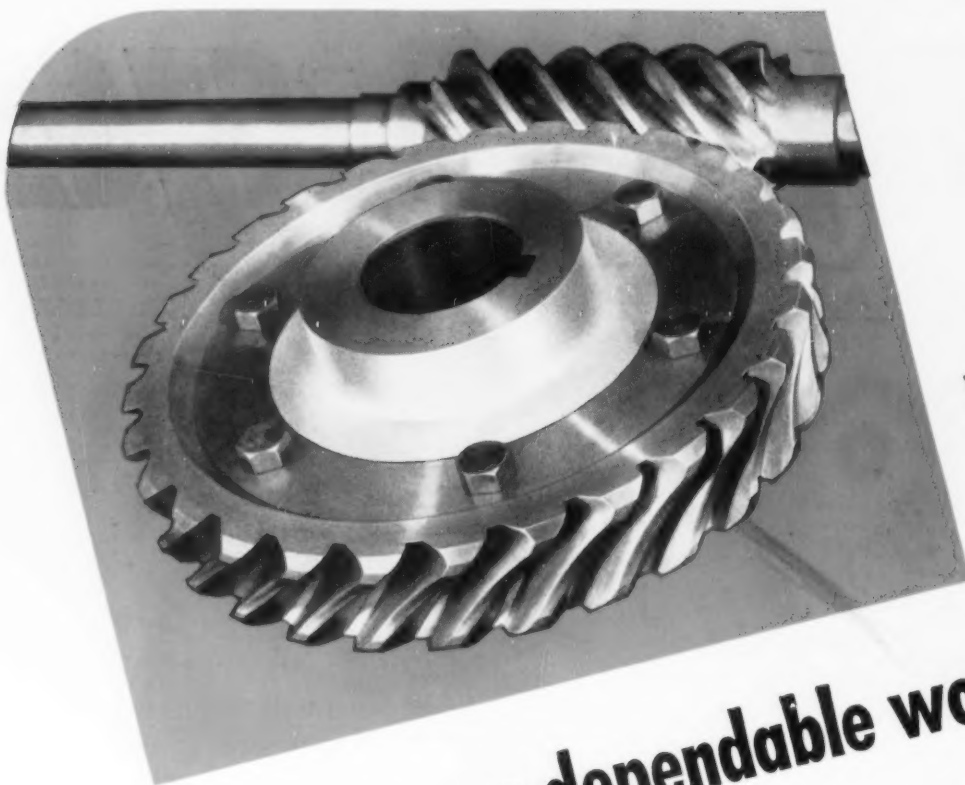
COLD ROLLED STRIP STEEL

Electrolytically pre-coated with Zinc, Copper, Brass, Nickel and Chromium •
In natural, polished and buffed finishes • Hot Dip Tin and Lead Alloy
Coated • Lacquer Coated in colors • Annealed Spring Steel • Alloy Strip
Steel • Uncoated Strip Steel • Carefully produced to your specifications.



THE THOMAS STEEL COMPANY • WARREN, OHIO

Specialists in Cold Rolled Strip Steel



Whether you want one worm-gear speed reducer or a thousand, a standard drive or a unit designed to meet special problems, Cleveland can serve you better.

Prompt service on dependable worm-gearing

• For dependable worm-gearing, consult Cleveland—a company which for 38 years has devoted its engineering skill and production facilities exclusively to the manufacture of high grade, precision-built worms and gears. Cleveland offers a complete line of worm gear sets and speed reducers, including the popular fan-cooled Speedaire—to meet the requirements of any machinery or equipment builder or user for this convenient, right-angle drive.

Our sales representatives, located in major industrial market centers, are ready to sit down with you and discuss your power transmission needs, to help you select correct types and sizes. Our service is prompt. Write for our latest catalog and give us an idea of your requirements. Your inquiry will receive our careful attention.

The Cleveland Worm & Gear Company, 3252 East 80th Street, Cleveland 4, Ohio.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.



CLEVELAND
Worm Gear

Speed Reducers

What does the inside of a billet have to do with a Forging?

Sound billets free from large internal voids, non-metallic inclusions, and visible surface seams are the only kind that a forger can use with any assurance of maintaining a high rate of production. Steel that contains flaws of critical size may open up under the hammer, while clean steel flows uniformly to produce sound, acceptable forgings.

At Bethlehem we take unusual care in manufacturing alloy steels for forging use. Chemical composition and grain size are closely controlled so that the steel will respond to heat-treatment uniformly and with minimum distortion. Billets are cooled slowly in bung-type furnaces, with separate cooling cycles being used for each different composition of alloy steel to avoid cooling cracks. Rolled billets are subjected to macro-etch tests to insure internal cleanness. Nothing is overlooked that might improve the overall quality.

Bethlehem Alloy Steels will go a long way toward helping you turn out a higher percentage of acceptable forgings per ton. We manufacture all of the AISI grades as well as carbon and special steels.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation



BETHLEHEM *ALLOY* STEELS



IRON AGE

CONTENTS

THE IRON AGE
Editorial, Advertising and Circulation
Offices, 100 E. 42nd St., New York 17,
N. Y.

GEORGE T. HOOK, Publisher
TOM C. CAMPBELL, Editor

EDITORIAL STAFF

Managing Editor George F. Sullivan
Feature Editor Darwyn I. Brown
News-Markets Editor Wm. V. Packard
Machinery Editor George Elwers
Associate Editors: William Gygax, H.
W. Van Camp, F. J. Winters; Assistant
Editors: R. L. Hatschek, John Kolb, Ted
Metaxas, W. B. Olson; Art Editor:
Thomas F. Burroughs; Regional Edi-
tors: E. C. Beaudet, Chicago; W. A.
Lloyd, Cleveland; W. G. Patton, De-
troit; John B. Delaney, Pittsburgh; Os-
good Murdock, R. T. Reinhardt, San
Francisco; Eugene J. Hardy, Karl Ran-
nells, George H. Baker, Washington;
Correspondents: Fred L. Allen, Birm-
ingham; N. Levenson, Boston; Fred Ed-
munds, Los Angeles; James Douglas,
Seattle; Roy Edmonds, St. Louis; F.
Sanderson, Toronto; F. H. Harley, Lon-
don, England; Chilton Editorial Board:
Paul Wooton, Washington Representa-
tive.

BUSINESS STAFF

Production Manager B. H. Hayes
Director of Research Oliver Johnson
Mgr. Circul'n & Promotion C. T. Post
Asst. Promotion Mgr. James A. Crites
Asst. Dir. of Research Wm. Laimbeer

REGIONAL BUSINESS MANAGERS

B. L. Herman, Philadelphia; Stanley J.
Smith, Chicago; Peirce Lewis, Detroit;
Paul Bachman, New England; Charles
R. Lippold, Cleveland; R. Raymond
Kay, Los Angeles; C. H. Ober, New
York; J. M. Spackman, Pittsburgh;
Harry Becker, European Representative.

REGIONAL OFFICES

Chicago 3, 1134 Otis Bldg.; Cleveland
14, 1016 National City Bank Bldg.; De-
troit 2, 103 Pallister Ave.; Los Angeles
28, 2420 Cheremoya Ave.; New England,
62 La Salle Rd., W. Hartford 7; New
York 17, 100 E. 42nd St.; Philadelphia
39, 56th & Chestnut Sts.; Pittsburgh 22,
814 Park Bldg.; San Francisco 3, 1335
Market St.; Washington 4, National
Press Bldg.; European, 111 Thorley
Lane, Timperley, Cheshire, England.

Circulation Representatives: Thomas
Scott, James Richardson.

One of the Publications Owned and
Published by Chilton Company, Inc.,
Chestnut & 56th Sts., Philadelphia 39,
Pa., U. S. A.

OFFICERS AND DIRECTORS

JOS. S. HILDRETH, President

Vice-Presidents: Everit B. Terhune, G.
C. Buzby, P. M. Fahrendorf, Harry V.
Duffy, William H. Vallar, Treasurer;
John Blair Moffet, Secretary; Maurice
E. Cox, George T. Hook, Tom C.
Campbell, Frank E. Tighe, L. V. Row-
lands, Directors. George Maiswinkle,
Asst. Treas.

Indexed in the Industrial Arts Index
and the Engineering Index. Published
every Thursday by the CHILTON CO.
(INC.), Chestnut and 56th Sts., Phila-
delphia 39, Pa. Entered as second class
matter Nov. 8, 1932, at the Post Office
at Philadelphia under the act of March
3, 1879. \$8 yearly in United States, its
territories and Canada; other Western
Hemisphere Countries \$15; other For-
eign Countries \$25 per year. Single
Copies 35c. Annual Review and Metal
Industry Facts Issue, \$2.00. Cable ad-
dress "Ironage" N. Y.

Member Audit Bureau of Circulations.
Member Society of Business Magazine
Editors.

Copyright, 1951, by Chilton Co. (Inc.)

EDITORIAL Seeds of Destruction Within? 7

NEWS INTERPRETATIONS

| | |
|----------------------------|----|
| Newsfront | 11 |
| The Iron Age Summary | 15 |
| Machine Tool Highspots | 29 |
| On the Assembly Line | 86 |
| West Coast Progress Report | 91 |
| The Federal View | 93 |

REGULAR FEATURES

| | |
|-------------------------|-----|
| Dear Editor | 20 |
| Fatigue Cracks | 24 |
| Dates to Remember | 32 |
| Free Publications | 34 |
| New Production Ideas | 35 |
| Iron Age Introduces | 82 |
| Iron Age Salutes | 83 |
| Construction Steel News | 132 |
| Clearing House | 188 |

TECHNICAL ARTICLES

| | |
|---|-----|
| Cold War Puts Heat on Metal Powder | 95 |
| Aluminum Boxes Inert-Arc Welded | 99 |
| Ingenious Blast Cleaning Adapted to Mass Production | 100 |
| New Threadless Pipe Joint Good to 3500 psi | 104 |
| AFS Meeting | 105 |
| Vertical Solidification of Steel Ingots Studied | 107 |
| Induction Heater Hardens 15 Different Parts | 110 |
| New Wheel Doubles Abrasive Belt Life | 111 |
| Pickle Liquor May Yield Cheaper Iron Powder | 112 |

SPOT NEWS OF INDUSTRY

| | |
|---|-----|
| Steel Industry Tops Nearly All Records But Earnings | 117 |
| Industrial Shorts | 118 |
| Alcan, Alcoa Expansion to Add 500 Million Lb. | 119 |
| PA's Struggle to Maintain Inventory Balance | 120 |
| Powder Men Want Lowdown on Bands, Bullets | 121 |
| Bits and Briefs | 122 |
| Conversion Steel Market Losing Sources | 122 |
| Canadian Fabricators Cautioned on Steel | 123 |
| OPS Sets Machinery Prices at June 24 Levels | 124 |
| Controls Digest | 124 |

MARKETS & PRICES

| | |
|-----------------------------|-----|
| Market Briefs and Bulletins | 161 |
| Nonferrous Metals Outlook | 162 |
| Iron and Steel Scrap Market | 164 |
| Iron and Steel Scrap Prices | 166 |
| Comparison of Prices | 168 |
| Steel Prices | 170 |
| Ferroalloy Prices | 174 |
| INDEX OF ADVERTISERS | 208 |

IRON AGE

editorial

Seeds of Destruction Within?

IN high places we hear that Stalin & Co.—bandits supreme—are having their troubles. Some people who ought to know, or think they know, say this trouble will grow and grow.

Satellite countries are giving the Ruskies worries and underground forces are said to be making gains. In our own country we hear statesmen say that internal trouble may rock Russia. If it doesn't happen soon it will come some time, they say.

European experts are quite sure that we are needlessly alarmed about Russia. (The term "experts" is used lightly here.) Reports are going around that as each month passes Stalin has to step up his purges and worry more.

All these reports may have a germ of truth in them. We certainly hope so. But they also have a germ of wishful thinking. Many people eat up this kind of news because it is exactly what they want to believe.

There will come a time—we hope—when the masses in commie countries will have taken all they can. Then they might do something about it. That time may be not far away; or it may be a hundred years from now. There are always more Stalins.

But let's assume that Stalin and his gang do have the seeds of destruction planted within their own yard. Let's assume that the people there are watering and nurturing these seeds. That's all to the good.

Before we run into the streets and halt the defense program; before we close up shop and call off the draft; before we bash each other over the head on the MacArthur-Truman squabble; and before we say peace-on-earth-good-will-to-men has arrived—let's look at our own seeds.

We have some seeds of destruction in our own country—seeds that, if allowed to grow, will produce what we fight against. We have modified socialism—it can go farther. We could stand better leaders in high government places. We could use a good straightforward foreign policy. We seem to know what we are doing in Europe but not in Asia.

We are paying too much attention to security as a goal in life. We are building a civil service force into an army that will be hard to cut. Our government tells us less and less about what it does and why. We accept mediocrity and yearn for a superman.

Let's kill off our own seeds of destruction before we glory in Stalin's would-be garden.

Tom Campbell

Editor

GET THESE EXCLUSIVE to increase productivity...

Carboloy Training School

Specialized basic and advanced training in getting the most out of carbide tools and dies is available at the Carboloy Customer Training School in Detroit to your key personnel. 3,000 feet of training space . . . over \$80,000 worth of training equipment . . . six full-time instructors.

Program of training includes visual instruction, shop practice and classroom discussions. Comprehensive courses in all phases of application, design, etc., of cemented carbide tools or dies; special course available in Coordinated Carbide Control for your Carbide Coordinator.

Your only cost: transportation to Detroit and living expenses of your men. Write for Booklet GT-197 . . . the Carboloy Customer Training Program.



Carboloy Training Films

Train new men, refresh "old-timers" to increase productivity, save carbide tools with these educational films for in-plant training:

Training Film Strips—Six silent 35-mm slide films cover design, grinding, brazing and application of carbide tools. Available at approximate print cost. Free film Catalog GT-223 on request.

"Everyday Miracles"—a nontechnical, 24-minute, 16-mm sound film on the development and use of cemented carbides. Available on loan as a free Carboloy service.

Carboloy Company can also assist you in obtaining U. S. Office of Education 16-mm sound motion pictures. These films explain techniques of brazing, grinding, and application of carbide tools. Descriptive circular from Carboloy Company on request.



Carboloy Plan of Coordinated Carbide Control

A practical system proved in hundreds of plants for increasing production and conserving tools through properly coordinating all phases of carbide tool design, use and maintenance.

"Triple C" Manual sections — available to supervisory personnel—explain in detail the procedure of this proved plan. Sections include:

- | | |
|---|--|
| 1. The "Triple C" Organization | 6. Application and Trouble-Shooting |
| 2. Starting and Maintaining the Program | 7. Tool Handling, Inventory Control and Requisitioning |
| 3. Training Carbide Personnel | 8. Centralized Grinding, Fabrication and Inspection |
| 4. Methods and Planning | 9. Records and Reports |
| 5. Establishing Tool Standards | 10. Case Histories |

Write for free descriptive Booklet GT-216-A.

IRON AGE *summary*

*iron and steel
industry trends*

Purchasing agents watch vital product mix . . .

Defense impact is not uniform on steel items

. . . Production scheduled at all-time record.

Vital Product Mix—Purchasing agents who have grown wise fighting procurement battles are keeping a watchful eye on steel product mix. Product mix is the percentage of various steel items that make up total production. Fluctuations of only a few points in the ratio between items mean a great difference in the steel market.

Unfortunately, the impact of defense and related steel programs is not uniform for all items. For example, beginning July 1 the steel industry's entire production of oil country goods will be shipped on DO orders only. The National Production Authority has indicated the same will probably be true shortly for structurals. Government programs are hitting plates and bars almost as hard.

The Real Picture—A breakdown of DO and essential program orders at one mill quickly shows the significance of product mix. Of this mill's total steel output during June, 56 pct is scheduled for these programs. But these programs will get 92 pct of this mill's bars, 96 pct of its plates, 97 pct of its structurals in June.

Of course, some other products are not being hit so hard. This mill makes considerable tonnages of tinplate, rails and track accessories which carry few DO's. These items help pull the overall DO percentage down to 56. But it is questionable if much tonnage could be taken away from these products to relieve the others because they are as essential as some of the programmed orders.

Right and Wrong Way—Steel producers are convinced that once the Controlled Materials Plan gets going limitation orders on steel consumption will have to be imposed. This would

be to prevent consumers from inflicting casualties in the procurement battle for "free" steel not programmed under CMP. If some control has to be imposed, they prefer it that way, rather than limiting the number of units a manufacturer can produce.

Limitations on consumption are more flexible because they leave consumers an incentive to produce as many units as possible. They can do this by conservation and by substituting other materials to make their available tonnage stretch farther. It would put a premium on efficiency, benefiting both the defense and the civilian economy. Unit limitation would make shortages worse, thus adding inflationary pressure.

Autos Race On—The auto industry is still producing as long as it can with available material. Although some cutbacks are beginning to show, most auto firms believe they can get by May. Some say they can weather June if cries for help from their suppliers don't pull them down from behind.

Alternate specifications are being used for many auto parts today. This industry is leaving no stone unturned in its search for substitute materials. In some companies, steel composition switches, particularly for bolts and studs, have become day-to-day routine. Efforts to get boron steel have not been too successful.

Another New Record—Steelmaking operations this week are scheduled at 104 pct of rated capacity, up one point from the previous week. If equaled, this rate will yield another new all-time record for steel produced in a single week. It is at an annual rate of 108.4 million net tons.

(nonferrous summary, p. 162)



Where you'll find
an eager ear



FOR YOUR SPRING STEEL PROBLEMS



FREE!

SANDVIK CATALOG DESCRIBES
785 SPRING STEEL SIZES

Write, on your letterhead, for
your copy, today.

HERE'S WHY...

In spite of shortages, your Sandvik representative is still solving spring steel problems every day.

He's using his specialized knowledge to suggest close-to-perfect substitutes for out-of-stock sizes. He's supplying steel to accurate tolerances that minimize rejects. And, he is still supplying the exact answers to specific spring steel requirements from Sandvik's stock of over 800 sizes.

For spring steel with uniform physical characteristics, fine surface finish, accurate gauge and long fatigue life, check with Sandvik.

Sandvik cold-rolled, high carbon strip steels are available:

- Precision rolled in thicknesses from .001"
- In straight carbon and alloy grades
- In special analyses for specific applications
- Annealed, unannealed or hardened and tempered
- In a wide range of widths
- Unpolished or polished bright, yellow or blue
- With square, round or treated edges

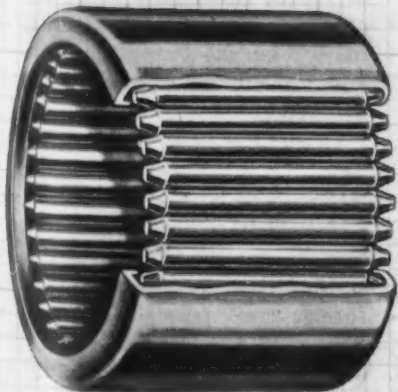
Phone, write or wire your nearest Sandvik office for further information or technical help.

SANDVIK STEEL, INC., 111 EIGHTH AVENUE, NEW YORK 11, N. Y.
WAtkins 9-7180

230 N. Michigan Ave., Chicago 1, Ill., FRanklin 2-5638
1736 Columbus Rd., Cleveland 13, Ohio, CHerry 1-2303
SANDVIK CANADIAN LTD., 426 McGill St., Mont., Can.

**you can
count on**

TORRINGTON NEEDLE BEARINGS



... for faithful performance and smooth anti-friction operation.

... for savings in machining time and costs. No grooves or shoulders are needed ... just a plain bore housing machined to proper dimensions.

... for fast, economical assembly. A simple arbor press operation seats the bearing by press fit. Spacers or retainers are not required.

And you can help your customers reduce maintenance. Needle Bearings require a minimum of service attention.

Our engineers will be glad to help you put these and other Needle Bearing advantages into your product.

THE TORRINGTON COMPANY

Torrington, Conn.


South Bend 21, Ind.

District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON NEEDLE BEARINGS

NEEDLE • SPHERICAL ROLLER • TAPERED ROLLER • STRAIGHT ROLLER • BALL • NEEDLE ROLLERS

FREE *publications*



These publications describe money - saving equipment and services . . . they are free with no obligation . . . just fill in and mail the postcard on the opposite page.

For Casting Economy

The immensely wide range of Foseco products for the treatment of metals, molds, and dies is described in a series of booklets detailing this British company's service for foundries to insure better castings at lower cost. Cleaning and coating compounds, shots and grits, various types of briquettes for ladle additions, regenerators, and numerous items of equipment are a few of the subjects covered in the series of brochures. *Foundry Services, Ltd.*

For free copy insert No. 1 on postcard.

Dust Suppressor

The new Whiting bag-type dust suppressor is illustrated and described in a 4-p. bulletin telling how this new suppressor is effective for dust, fumes and smoke, and has been approved as acceptable to the stringent rules set up by the Los Angeles Smog Control Board. When used on foundry cupolas, it is shown to remove all gases from the top of the cupola stack and suppress more than 95 pct of the solids. *Whiting Corp.*

For free copy insert No. 2 on postcard.

Trailer Data Book

A new 52-p. metal-bound "Who's who" of the 29 basic Fruehauf trailer models details the exclusive "Multi-Rate" single axle and patented "Gravity-Tandem" suspensions and various underconstructions for every hauling need. Specifications and features of 3 different types of Aerovans, 2 different types of stainless steel trailers, and numerous other types are presented. Advantages and best uses of the six types of trailer land-

ing gear available are outlined, as are couplers for a wide variety of hauling needs. A total of more than 300 nominal length variations are shown to be available from the 29 basic Fruehauf models. *Fruehauf Trailer Co.*

For free copy insert No. 3 on postcard.

Welding Stainless

"The Welding of Stainless Steels" is a new 48-p. handbook describing in detail all phases of stainless steel arc welding. It discusses and illustrates such technical information as the metallurgical background, specific uses of alloying elements and facts in general pertaining to the welding of stainless steels. Also detailed are the AISI analyses, analysis range, color guide and tensile data of the various groups of stainless steels. Included is data on uses and specifications of each type of McKay stainless steel electrode and information about the three types of coatings used for each. *The McKay Co.*

For free copy insert No. 4 on postcard.

Electronic Equipment

Products of the major radio-electronic equipment manufacturers in the U. S., complete with prices and discounts, are listed in a new 1053-p. catalog designed to serve as a valuable ready-reference buying guide to officials seeking a fast, dependable source of supply. It shows how this large electronics wholesaler maintains a tremendous inventory of standard parts and equipment used in many industrial fields. *Available to authorized purchasing agents who address inquiries to this column on company letterhead. Milo Radio & Electronics Corp.*

Cold Headed Fasteners

A new 34-p. illustrated catalog explains the savings in operations and materials costs of cold headed fasteners. It illustrates the vast variety of nails, rivets, screws and other specialties available through the cold heading method, and contains many useful reference tables. The booklet is separated into labeled step-down sections for quick reference. *John Hassall, Inc.*

For free copy insert No. 5 on postcard.

Force Indicator Bulletin

A new 4-p. bulletin includes for the first time engineering specifications on all 12 models of the Hunter force indicator, a precision instrument for accurate force measurement in design, research, production, inspection and maintenance. Operation of the unit, types of loads measured, typical applications, accessories and use of the six stainless steel attachments are also covered. Maximum capacity, dial divisions, readability and frictional error in addition to detailed information on the components, weight and dimensions of the instrument are presented. *Hunter Spring Co.*

For free copy insert No. 6 on postcard.

Stainless Booklet

A new 16-p. booklet on precipitation hardening stainless steels describes the properties, available forms and fabrication of both Armco 17-4 PH and 17-7 PH stainless steels. The booklet details advantages, corrosion resistance, heat treatment and mechanical properties. Also included are data on high temperature properties, fabrication, and forms in which the

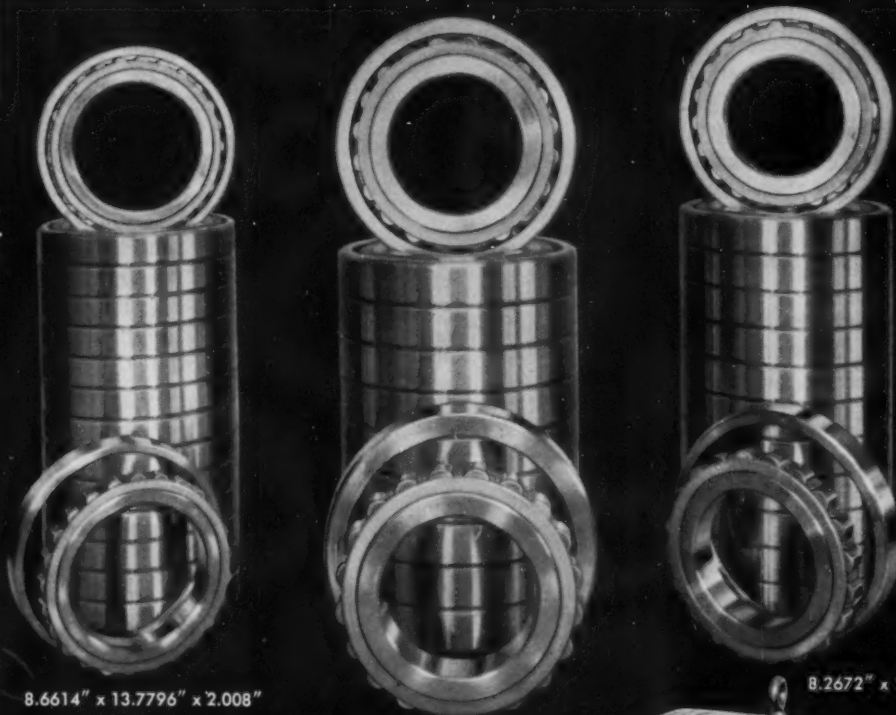
Turn to Page 146



Contact **KAYDON** Muskegon

FOR ALL TYPES OF BALL AND ROLLER BEARINGS: 4" BORE TO 120" OUTSIDE DIAMETER

KAYDON
Roller
Radial
Bearings



8.6614" x 13.7796" x 2.008"

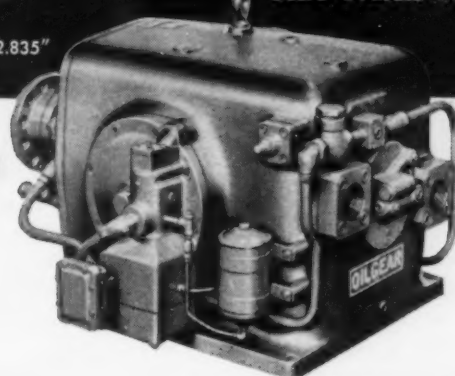
9.4483" x 17.3228" x 2.835"

8.2672" x 14.9606" x 2.402"

KAYDON and OILGEAR cooperate for compact design

OILGEAR engineers, pioneering Fluid Power Pumps and Motors, achieved greater compactness and efficiency than ever before considered possible. KAYDON Engineers, pioneers in Thin-Section Precision Bearings, created bearings that were "right at home" at the high level of OILGEAR advanced design.

KAYDON Precision Bearings and Needle Rollers have helped many machinery builders achieve modern design with fewer parts, greater compactness, reduced weight, precision smoothness in operation . . . advantages that improve production, cut costs, and carry impressive sales appeal.



This exploded view shows KAYDON Front and Rear Roller Rotor Bearings with relation to other parts of the 150 hp OILGEAR Fluid Power Variable Delivery Pump (above) for machinery with operating pressures up to 3000 pounds per square inch . . . with smooth, quiet, startlingly new fluid power performance characteristics. KAYDON Bearings are used also on 60 hp and 100 hp OILGEAR Fluid Power pumps.

KAYDON

THE **KAYDON** ENGINEERING CORP.

MUSKEGON • MICHIGAN

KAYDON Types of Standard and Special Bearings:
Spherical Roller • Taper Roller • Ball Radial • Ball Thrust
• Roller Radial • Roller Thrust • Bi-Angular Bearings

PRECISION BALL AND ROLLER BEARINGS

production ideas

Continued

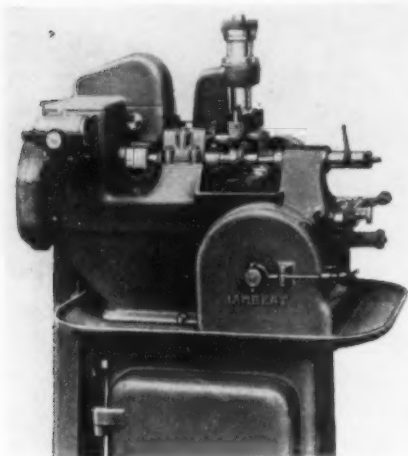
riveting and general forcing operations has ram speed of 60 ipm down and 90 ipm up under full load. The ram is controlled by a foot pedal and is activated by a vane type pump set to operate at 1250 psi. The press is steel welded construction; the cylinder, a Meehanite metal casting. *Ross & Co.*

For more data insert No. 27 on postcard, p. 35.

Gear-Hobbing Machine

For quantity production of small gears; effects 50 pct time savings.

A new Lambert Type 75 semi-automatic gear hobbing machine is designed specifically for cutting gears with straight teeth, gears with teeth inclined up to an angle



of 18°, worm wheels (cut radially) and, with a special attachment, bevel gears with straight teeth. Combined radial movement with longitudinal movement shortens the overall stroke and accordingly increases the productive capacity of the machine. *Carl Hirschmann Co.*

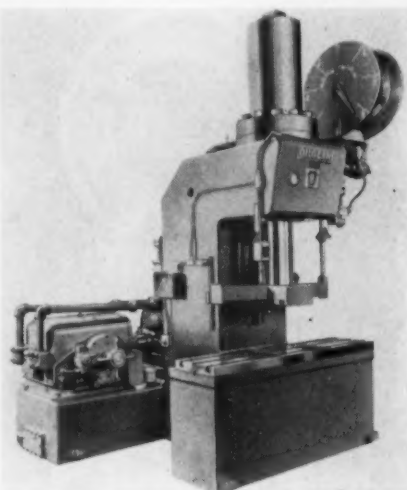
For more data insert No. 28 on postcard, p. 35.

Gag Press

Straightens large steel pipes.

Integral joint steel casings and tubing, in sizes from 2 3/8 to 10 3/4 in. OD and having yield strength up to 125,000 psi, are squeeze straightened in anvils on this 200-ton gag press. Semi-automatic pushbutton control, independently variable pressing and return speeds, selection of higher speeds down at half tonnage, remote, direct reading pushbutton stroke adjustment,

guided 12x16-in. ram nose and 72-in. long table with dual T slots are salient features of the press. An Oilgear two-way variable delivery pump is direct connected to a 125 hp, 1500 rpm electric motor



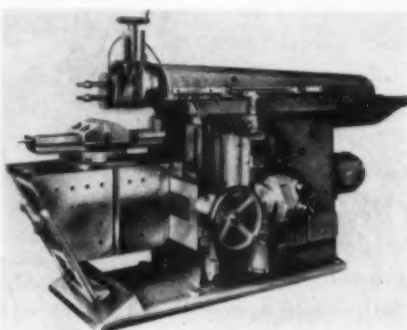
through a speed reducer. The press has 20-in. stroke, daylight opening of 35 1/4 in. and throat, 12 in. Maximum ram speed down at full tonnage 188 ipm; at half tonnage, 393 ipm. Maximum speed up is 362 ipm. *Oilgear Co.*

For more data insert No. 29 on postcard, p. 35.

High Speed Shaper

Production machine for heaviest cuts with extreme accuracy.

Unrivalled cutting capacity with minimum power requirements is claimed for Klopp hydraulic high speed production shaping machines. Speed is infinitely variable while the machine is in operation. The



return stroke is accelerated for increased speed of operation. Rates of feed for the table and the tool slide are obtained by means of graduated scales. Table travel can be stopped at any point between the two end positions by adjustable limit switches and the electro automatic cutout of the machine. Table feed in both directions is by hand,

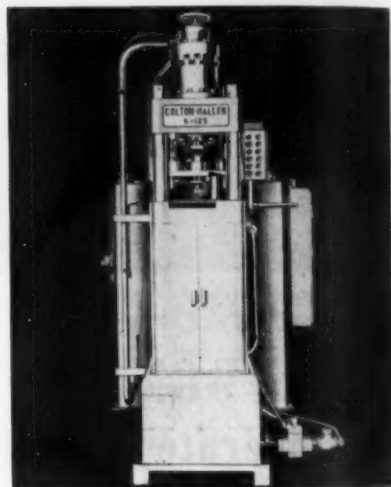
hydraulic power or by fast traverse motor. Operation controls are centralized for operator convenience. *Klingelhofer Machine Tool Co.*

For more data insert No. 30 on postcard, p. 35.

Hydraulic Presses

For compacting powdered metals; 125 and 100-ton pressure capacity.

Two new Colton-Haller hydraulic presses are four tie-rod type with 6-in. die fill and one pressing motion from the top, one pressing and one ejection motion from the bottom, and stationary core rod. The die opening through the table is 8 3/4 in. with 10 3/4 in. opening for the flange. Dies can be changed quickly and easily. Both presses have dual concentric lower cylinders, the outer for compacting and the inner for ejection of compacts. Stroke of each cylinder is adjusted



and locked externally. The presses have a 3000 psi hydraulic system for the final pressing, and a 600 psi large volume, primary pressure for fast approach speeds. Complete cycles are 12 per min with full 6-in. die fill, and 18 per min with 3-in. die fill. Presses are sequency operated. *Arthur Colton Co.*

For more data insert No. 31 on postcard, p. 35.

Balancing Machines

Facilitate accurate and rapid balancing of rotating units.

In these dynamic balancing machines the reaction of the bearing rolls is transmitted elastically by a system of levers to supporting springs. Any unbalance of the rotating test piece creates oscillations of resonance in the bearing rods which generate an electric

Turn to Page 152

“Tycol Apreslube
cuts bearing failure...
keeps production going at top speed”



That's correct! Tycol Apreslubes are extreme pressure lubricants that stand up under severe heat and moisture conditions, under tremendous loads. They inhibit rusting, and are highly stable.

Tycol Apreslube means lower lubrication costs... longer equipment service life... and positive protection against excessive gear and bearing wear.

For complete data, call or wire your nearest Tide Water Associated office.

SEND FOR A FREE COPY OF "TIDE WATER ASSOCIATED LUBRICANIA"



Boston • Charlotte, N. C. • Pittsburgh
Philadelphia • Chicago • Detroit
Tulsa • Cleveland • San Francisco



May 3, 1951

IRON AGE

introduces

Stanley F. Krzeszewski, elected a vice-president of **AMERICAN WHEELABRATOR & EQUIPMENT CORP.**, Mishawaka, Ind.

Alexander Babay, appointed assistant to the president of the **WOOLDRIDGE MFG. CO.**, Sunnyvale, Calif.

Allison L. Bayles and **Allen M. Harrelson**, appointed vice-president of engineering and comptroller respectively of the **SCAIFE CO.**, Oakmont, Pa.

C. Denson Day, elected vice-president of **MACHINERY ASSOCIATES, INC.**, Philadelphia.

E. C. Girty, promoted as vice-president in charge of operations of the **NATIONAL ROLL & FOUNDRY CO.**, Avonmore, Pa. **W. E. Curran** was promoted to general superintendent and **J. C. Kepfer** was named executive assistant. **Reynold E. Klages** was elected chairman of the board and **Leland E. Smith** was elected vice-president.

G. A. Shoemaker, elected a vice-president of **PITTSBURGH CONSOLIDATION COAL CO.**, Pittsburgh. Other vice-presidents elected: **Walter F. Schulten** and **J. M. Knowles**. **Henry C. Rose** becomes president of the Pittsburgh Coal Co. division.

George T. Fonda, appointed vice-president of the **WEIRTON STEEL CO.**, Weirton, W. Va.

C. W. Hollingsworth, promoted to divisional sales manager, heading the Unbrako socket screw, Flexloc locknut and Hollowell steel collar division of the **STANDARD PRESSED STEEL CO.**, Jenkintown, Pa. **Raymond N. Gruber** succeeds Mr. Hollingsworth as manager, Unbrako socket screw division.

George S. Caplan, joined the firm of **M. W. SINGER CO.**, Pittsburgh.

R. E. McNulty, named manager of the new Madison, Ill., division of the **DOW CHEMICAL CO.** **D. W. Watters** assumes the production responsibilities in Midland and will be production manager at Madison. **R. L. Dietrich**, appointed superintendent of the rolling mill, **G. Ansel** has been named chief metallurgist for Madison.

Orson A. Rockwell, elected a vice-president of the **CALUMET & HECKLA CONSOLIDATED COPPER CO.**, Boston.

E. C. Sonneman, promoted to assistant export divisional manager of the **CATERPILLAR TRACTOR CO.**, Peoria, Ill.

John F. Scott, appointed as tubular products division manager of the general sales department of **U. S. STEEL SUPPLY CO.**, Chicago.

Charles R. Schmitt, appointed manager, lubrication sales department of the **E. F. HOUGHTON & CO.**, Philadelphia.

Jack L. McGinnis, appointed assistant works manager, **JACK & HEINTZ PRECISION INDUSTRIES, INC.**, Cleveland.

H. H. Beyma, transferred from Oakland, Calif., to Seattle as sales manager of the Northwest district for **KAISER STEEL CORP.** **J. M. Cosgrove** is transferred to Oakland for special duties with the tinplate program. **O. D. Hole** moves to Oakland to manage sales of rolled steel products and **M. H. Howard** becomes assistant manager of by-products sales.

Turn to Page 84



ROBERT T. FRISBIE, elected president of the **New Britain Machine Co.**, New Britain, Conn.



HENRY D. SHARPE, JR., elected president of **Brown & Sharpe Mfg. Co.**, Providence.



LUKE E. SAWYER, elected president of the **Babcock & Wilcox Tube Co.**, New York.

IRON AGE

salutes

I. W. Wilson



I. W. WILSON, president of Aluminum Co. of America, is Alcoa's "great anticipator." Handling the tough problems of today he keeps an eye on the problems of tomorrow.

It's been that way with "Chief" Wilson from the day he joined Alcoa. That was in 1911 when the young electrochemist was just out of M.I.T. At 60 he still faces forward.

During World War II "Chief" Wilson pushed Alcoa's pre-war 327 million lb a year capacity to 1.6 billion lb. Alcoa spent \$300 million on its own and built government plants worth \$450 million without fee or profit. Mr. Wilson received the President's Certificate of Merit, highest civilian award for war service.

Today he is guiding another great Alcoa expansion. The program will add 240 million lb of primary aluminum capacity. Alcoa's "quick action" increase will add another 158 million lb capacity to the defense effort. This will come from plants using high-cost electric power—plants not normally profitable to operate.

"Chief" Wilson and Alcoa foresaw the end of additional privately-owned water power and the prospect that other power costs would rise. Alcoa's Point Comfort, Tex., reduction plant which started operations in March 1950 uses natural gas as a power source, first such use in aluminum production.

It's no wonder, then, that the "Chief" is so easy to beat at golf and bridge. He's got too many other things on his mind.



RALPH E. KNIGHT, named as vice-president of Kaiser Magnesium Co. and Kaiser Bauxite Co., Oakland, Calif.



BRUCE A. DEAN, elected vice-president in charge of sales of Chase Brass & Copper Co., Inc., Waterbury, Conn.



ROBERT D. LAWSON, appointed sales manager, grinding machine division of the Norton Co., Worcester.



JOSEPH H. REID, elected a vice-president of National Lead Co., titanium division, New York.

IRON AGE *introduces*

Continued

G. E. Campbell, appointed assistant works manager and **Donald A. Sutherland** as industrial sales manager, Pesco products division of **BORG-WARNER CORP.**, Chicago.

Edward Barwell, named industrial relations coordinator of **WORTHINGTON PUMP & MACHINERY CORP.**, Harrison, N. J.

B. V. Ronco, appointed as chief engineer of **MORRISON STEEL PRODUCTS, INC.**, Buffalo.

John W. McGovern and **H. Gordon Smith**, elected to the board of directors of **U. S. RUBBER CO.**, Passaic, N. J.

Nils O. Eklund, appointed general sales manager of **KAISER FRAZER CORP.**, Willow Run, Mich.

Jacob W. Vreeland, appointed chief metallurgist for the electroplating anode division of **WAGNER BROS., INC.**, Detroit.

E. R. Almdale, appointed manager of the Michigan district for **CARBOLLOY CO., INC.**, Detroit.

Harry E. Lewis, promoted to general sales manager, industrial sales department—Perlite Div., **GREAT LAKES CARBON CORP.**, New York.

W. R. Davies, appointed as manager of the specialties section, Lighting Div., of **WESTINGHOUSE ELECTRIC CORP.**, Cleveland.

Louis P. Struble, Jr., elected a member of the board of directors of **DRAVO CORP.**, Pittsburgh.

Carroll L. Wilson, appointed director of the industrial development department of **CLIMAX MOLYBDENUM CO.**, New York.

Charles S. Sons, appointed acting Eastern service manager, of the **CUMMINS ENGINE CO., INC.**, Columbus, Ind. **Dillard B. Davis** replaces **Lloyd Kerber** as regional service representative, central region with headquarters in Chicago.

Ralph W. Rausch, appointed consulting engineer of **LINK-BELT CO.**, Chicago. **Joseph J. Richard**, appointed chief engineer succeeding Mr. Rausch at the Caldwell plant.



WILLIAM A. HIBLER, appointed district manager, Pittsburgh office of Luria Steel & Trading Corp.

W. P. Snyder, 3rd, elected president succeeding **Harry S. Bradley**, who is retiring as active head of **SHENANGO-PENN MOLD CO.**, Pittsburgh.

Samuel Schneirov, named director of the new central employee relations department of the **AMERICAN RADIATOR & STANDARD SANITARY CORP.**, Pittsburgh.

G. Whitney Snyder, elected to the board of directors, and **C. J. Peck**, was elected a vice-president of the **SHENANGO FURNACE CO.**, Pittsburgh.

John Romano, appointed general sales manager, and **M. T. Schmid** as comptroller of the **DELTA-STAR ELECTRIC CO.**, Chicago. **R. S. Keeler**, named manager of utilities sales, and **W. H. Boyce**, manager of the industrial division.

William J. Woods, named director of purchasing for **MACKINTOSH-HEMPHILL CO.**, Pittsburgh.

Louis C. Begg, appointed district manager of the newly established Buffalo sales division of **AMP CO METAL, INC.**

A. F. Jelinek and **J. C. Maezer**, elected to the board of directors of the **CLEVELAND AUTOMATIC MACHINE CO.**, Cincinnati. Mr. Jelinek has been with the company for 33 years.

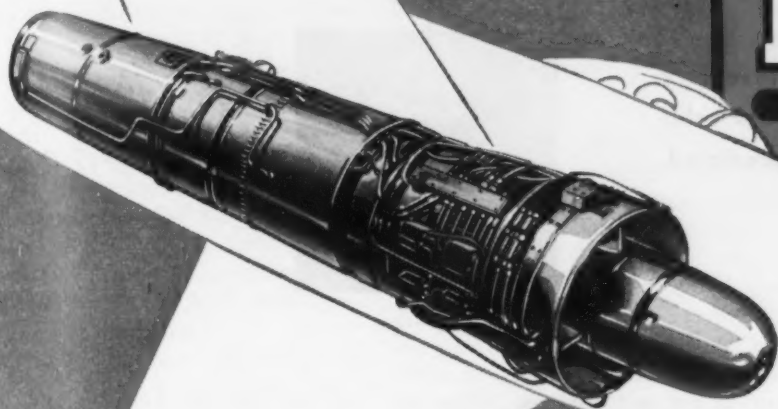
William S. Richardson, elected a vice-president of the **B. F. GOODRICH CO.**, Akron, Ohio.

Francis J. Myers, elected a director of the **ALAN WOOD STEEL CO.**, Conshohocken, Pa.

John T. Crimm, **Charles P. McGaha**, **Robert Foree** and **Frank Ryburn, Jr.**, elected to the board of directors of **LONE STAR STEEL CO.**, Dallas.

Another First for...

N·A·X
ALLOY STEELS



The use of N-A-X ALLOY STEEL in Aircraft Gas Turbines saves up to 50 per cent of critical Stainless Steel.

**Conservation is possible — without sacrifice
with use of N-A-X ALLOY STEELS**

With the demand for greatly increased quantities of the critical and strategic Stainless Steels used in Jet Engines intensified by the acceleration of the building program, the Air Force requested the producers of these engines to seek *suitable* material with less critical alloy content to replace the Stainless Steel for certain moderate temperature application in these aircraft gas turbines.

The steel selected had to be of low-alloy content with high strength and good welding characteristics. Ordinary low carbon steel did not meet the requirements because of its low tensile properties and the fact that it could not be satisfactorily welded by the inert arc process, which is widely used in aircraft gas turbine manufacture.

The data available from tests made on several weldable low-alloy, high-strength steels indicated that N-A-X ALLOY STEEL was the most satisfactory of the group — *its selection followed*. Unlike other possible substitutes, N-A-X ALLOY STEEL has good low temperature impact values, maintains its higher strength and is not subject to temper brittleness in the wide operating temperature range required of the steel for this purpose — from a low of -70°F. to $+800^{\circ}\text{F.}$

The use of N-A-X ALLOY STEEL for this application has cut the amount of Stainless Steel required in half. This is of considerable importance to the Air Force.

GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division

Ecorse, Detroit 29, Michigan

NATIONAL STEEL CORPORATION



on the assembly line

automotive
news and
opinions

Auto steel outlook ominous . . . Inventory imbalance threatens output . . . Car sales slow down but upswing is predicted.



by *Walter G. Patton*

PA Shortage Outlook—Some Washington optimism that the steel situation is due to get better is not shared by Detroit steel buyers. Most steel purchasing agents here are now in the middle of the tightest steel squeeze since the end of World War II.

The present outlook for carbon bar steel is dismal; the immediate future of alloy bar steel is even darker. To emphasize the point, bar steel is also the item most needed for defense. However, any cutbacks in steel bar inventories should eventually be reflected in easier steel.

Scrap Drawback—While Washington takes an optimistic view of the high operating rate of steel mills, many Detroit steel buyers are focusing their attention on the growing tightness of steel scrap. Allocations of scrap have been necessary on several occasions to keep Detroit steel mills going. More outside help is in prospect.

Detroit has always generated more steel scrap than it uses. At the moment, local steel mills say they are losing their scrap inventory at a rapid rate. With a sharp dip in auto production forecast for the third quarter, the outlook for steel scrap in Detroit is not promising.

Unbalanced Inventory—While total steel on hand in auto plants has been reduced the total reduc-

tion is not yet serious. What is serious is the lack of inventory balance.

Lack of balance of flat-rolled steel inventory has been a serious operating problem for several years. In recent months, inventory imbalance of carbon and alloy bars has been equally serious. In the case of alloy steel the problem is especially difficult because so many grades of alloy steel are used. When flat-rolled steel was short, larger sheets could often be cut into small pieces. Machining down a large bar is usually a forbiddingly costly and time-consuming operation.

Model Change Policy—Washington is expected to discuss 1952 and 1953 model changes this week. A decision to be made at that time will determine national policy on model changes. However, whether or not a car producer will go through with a planned model change on which tooling is already completed is still a matter of corporation policy. (It can be predicted confidently that whatever model changes are made during 1951 will probably not be extensive.)

If cars should back up in auto dealers' hands, today's thinking about changing models will of course go out the window. At the moment, however, auto sales executives say there is very little

wrong with the automobile market that a few days of sunshine, energetic effort by auto salesmen and an easing of credit restrictions will not cure.

Used Car Handicap—New cars are piling up in the field, particularly for some of the independents. Field stocks of the Big Three are increasing but are still below the danger level.

The most serious sales problem today is the large stock of 1949-50 used models in dealer's hands. For the past several months, these comparatively high-priced used cars have not been moving. Regulation W has been a serious deterrent, it is admitted. During the past week, more favorable reports have come into the auto sales offices on used car sales. However, the industry is not yet over the hump on over-30-day used cars, say sales executives.

Generally Sound—Despite occasional pessimistic reports, the automobile sales picture is generally favorable. Inventories are up. But so is dealer capital. For this reason, car distributors can carry safely a much larger inventory of cars than most outsiders expect.

The most serious problem is that large inventories are concentrated in the hands of comparatively few dealers whose position is temporarily serious. From a sales standpoint, the auto industry

assembly line

Continued

as a whole continues to be in excellent position. This may not be true, it is admitted, of the appliance industry, for example.

Buying Backfires—A good share of the responsibility for high dealer used car inventories can be laid at the door of the dealers themselves. Anticipating a car shortage as a result of curtailed auto output, many dealers bought up used cars last fall at a feverish pace. Many of these cars were stored in barns and warehouses. The dealers thought they were going to make a killing.

On the assumption that car production would be seriously curtailed by the end of the first quarter, this reasoning was logical. However, high auto output so far this year and increased buyer resistance has knocked all this fine reasoning into a cocked hat.

Replacement Parts—One of the more serious aspects of the steel shortage is the effect on produc-

tion schedules of replacement parts. Fighting for new car volume, many manufacturers have trimmed replacement parts schedules in order to complete a maximum number of new assemblies.

Dealers have complained bitterly of their inability to get replacement parts. In some instances, replacement parts schedules have been increased to meet this situation. The replacement parts picture is still critical. It will remain so indefinitely.

Ace in the Hole—While auto profits fall off rapidly when production schedules are cut, the industry still has an ace in the hole: service parts. Profit per dollar of sales on service parts is substantially higher than new car profits. An established company with millions of owners has a lush market on which to draw.

In addition to the profits earned by the car producer, the company may have subsidiaries which also supply service parts. This is one of the great underlying strengths of GM.

Alloying Changes—The alloy shortage has created many critical

problems for automotive foundries. One big foundry is recovering the tungsten from high speed steel grindings. (THE IRON AGE, Apr. 26, p. 81). The recovered material is employed to supply alloy for camshafts.

It is not uncommon today to make substantial changes in the composition of automotive castings. One firm told THE IRON AGE this week the composition of its motor block iron has been changed three times during recent weeks. The point was also made that each change in composition has resulted in a substantial increase in production costs.

Better Than Expected—Reports that machine tools pulled out of government stocks for the defense effort are badly catalogued and generally in poor shape seem to be exaggerated. At least two large auto producers have reported favorable experience with defense tools taken out of mothballs. In one case, about 50 pct of the required machine tools came from the government pool.

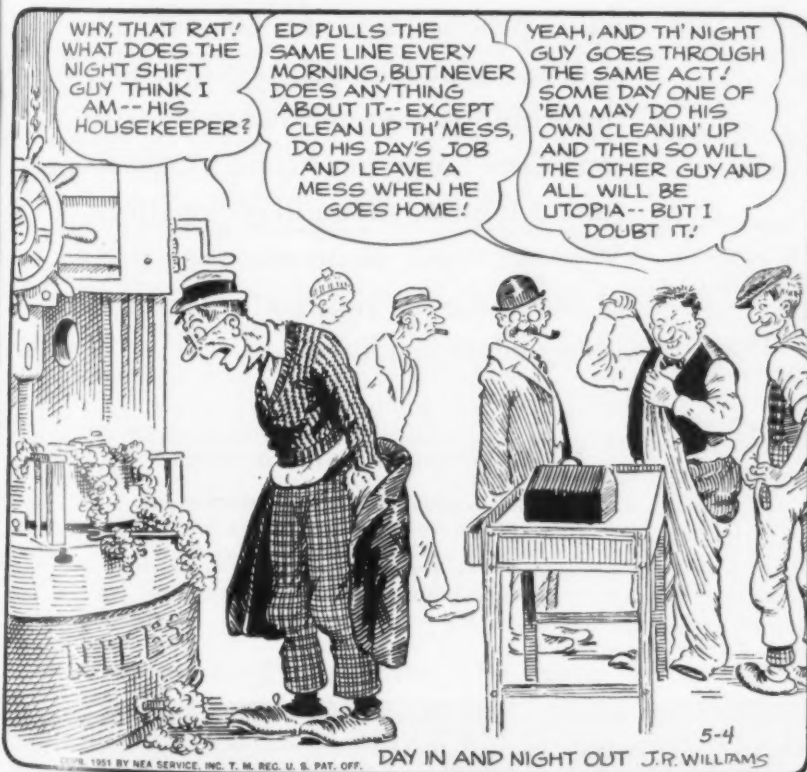
The usual procedure is to review description cards held in Washington. Investigators are then dispatched all over the country to examine the machines. As expected, many descriptions have proved to be inaccurate. "But no more inaccurate than the descriptions we would make ourselves," one tooling expert told THE IRON AGE. Happily, in some instances, machines which did not show up in the description cards are found in the warehouses.

Continued Freeze—The present prospect is that the freeze on automobile prices will be continued after it expires on May 1. During a visit to Detroit last week, Price Chief Michael V. DiSalle defended the government's position on pricing.

He denied there has been harsh discrimination against the automobile industry, asserting that profit statements for the first quarter will vindicate the position taken by the government pricing experts. The automobile industry's counter to this argument is, of course, that these profits will vanish rapidly in the wake of production cuts.

THE BULL OF THE WOODS

By J. R. Williams



53 BLAST FURNACES LINED WITH NATIONAL CARBON, TRADE-MARK HAVE AVERAGED 1,000,000 TONS EACH — and still going strong!

● National Carbon Company has now equipped 53 furnaces with carbon-block linings. 27 of these linings have produced over 1,000,000 tons of iron apiece at this writing. 10 of these linings have produced 1,500,000 tons. One lining has topped 1,900,000 tons. All linings are still going strong. We can think of no stronger proof of the value of "National" carbon for lining blast furnaces.



The term "National" is a registered trade-mark of
NATIONAL CARBON COMPANY
a Division of
UNION CARBIDE AND CARBON CORPORATION
30 East 42nd Street, New York 17, N. Y.
District Sales Offices: Atlanta, Chicago, Dallas,
Kansas City, New York, Pittsburgh, San Francisco
In Canada: National Carbon Limited, Toronto 4

OTHER NATIONAL CARBON PRODUCTS

BLAST FURNACE LININGS • BRICK • CINDER NOTCH LINERS • CINDER NOTCH PLUGS • SKIMMER BLOCKS • SPLASH PLATES • RUNOUT TROUGH LINERS • MOLD PLUGS • TANK HEATERS

west coast progress report

*digest of
far west
industrial
activity*

by R.T. Reinhardt



Who's Happy?—Location of Alcoa's 85,000-ton annual capacity aluminum reduction plant near Wenatchee, Wash. (see p. 91), doesn't please all of the Pacific Northwest's industrialists. Some strongly oppose further allocation of electric power to the aluminum industry with its high rate of consumption—about 800 kwh per wage earner man-hour.

Four pot lines will use about one and one-half billion kwh per year. When the plant is in operation in about 15 months expanded generating facilities at Rock Island Dam will initially supply 150,000 kw of firm power and supplementary power will be provided by BPA on an interruptible basis.

By 1957 the entire power load will be carried by BPA. Although not revealed by Alcoa, it is believed the power rate will be something less than 3 mills per kwh—better than could be obtained in alternate locations.

The Wenatchee plant will be the same size as Alcoa's present reduction works at Vancouver, Wash.

More Cable—Alcoa is doubling rod, wire and cable production at its Vancouver, Wash., mill. Approximately one million more pounds of cable per month will be added by three shift operation. Nominal capacity is 2.5 million tons.

Magnesium—Two of the West's magnesium producers will be back

at work soon. Kaiser Magnesium Co. at Manteca, Calif., will have its plant re-activated by August. A third kiln for processing dolomite is being installed at Moss Landing, Calif., and one of the three ferro-silicon furnaces at Permanente, Calif., is producing for the magnesium operation.

Pacific Northwest Alloys Corp. expects to be in production at Mead, Wash., by fall.

Scrap Shuffle—Western producers are eating up scrap inventories to maintain high operating rates. Scrap continues tight with heavy tonnages moving on allocation from Los Angeles to Geneva Steel in Utah; from San Francisco to Portland and Seattle; and from Portland to Seattle.

Hope that 40 miles of rails recently pulled up by the Pacific Electric Railway Co. in Los Angeles would hit the scrap market faded when the company decided to stock them for re-use in extending lines into the industrial area.

Openhearth to Close—Bethlehem Pacific Coast Steel Corp. has reported to Los Angeles County air pollution control officials that it will close its openhearth as soon as satisfactory smog control devices are installed on two operating electric furnaces and a third to be added.

Materials Dividends—Controls on emissions from openhearth,

electric furnaces and iron and non-ferrous foundries in Los Angeles County are trapping dusts containing large percentages of silicon, iron, magnesium, calcium and aluminum. Eighteen other elements have been detected in minor or extremely small percentages.

Control of emissions from petroleum refineries is salvaging about 160 tons of hydrogen sulfide per day which is being converted by three companies into 415 tons of sulphuric acid which has a market value of about \$6700.

Starts Shipments—Kaiser-Frazer Corp. has begun shipment of aircraft parts for Lockheed. New facilities and a new building are being added at the Oakland plant. The extra 50,000 sq ft of space will be used to produce fuselage waist sections for bombers.

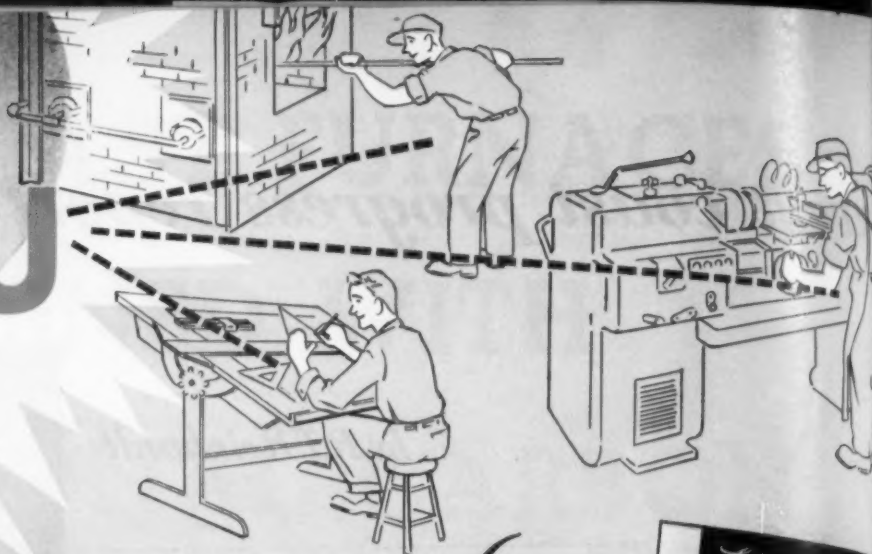
Geneva Steel Loses—Supreme Court of Utah has ruled against the contention of Geneva Steel Co. that state law prior to 1949 did not permit the state tax commission to fix a value on iron ore for tax purposes when there was an actual selling price in a valid contract.

Eimco Buys—Eimco Corp. of Salt Lake City has purchased the steam locomotive shop of Denver & Rio Grande Western R.R. Plans to construct a shop in the Chicago area have been sidetracked. The new quarters may be used for fabrication of large vacuum filters.

have

YOU

used
these



LATROBE DESEGATIZED* BRAND MOLYBDENUM HIGH SPEED STEELS

*Trade Mark Reg. U. S. Pat. Office.

The foremost problem facing the metalworking industry today stems from the critical shortages that exist in many raw materials.

Sudden shifts from the use of old and familiar to relatively new and unfamiliar materials are sometimes necessary, therefore, to overcome these shortages and still meet the demands created by expanding production trends.

To assist the possible new—and the old—users of its Desegatized Brand molybdenum high speed steels—Electrite Double-Six, Electrite Tatmo, Electrite TNW, Electrite MV Series, and Electrite HV-6—the Latrobe Electric Steel Company has carefully compiled guides to their proper selection and use. These guides, in the form of pamphlets illustrated at the right, are complete and contain up-to-date information on the analyses, forging, hardening, tempering, testing, recommended uses and the available forms of each of these steels. Get in touch with your nearest Latrobe representative for copies or write direct to the main office in Latrobe, Pennsylvania.

And remember . . . Latrobe's Desegatized Brand molybdenum high speed steels are fully uniform and free from harmful carbide segregates. This quality—found in all Desegatized Brand steels—guarantees greater tool and die efficiency—an important factor in your production program today!



BRANCH OFFICES AND WAREHOUSES: Boston, Buffalo, Chicago, Cleveland, Dayton, Detroit, Hartford, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, St. Louis, Seattle, Toledo.

SALES AGENTS: Birmingham, Dallas, Denver, Houston, Wichita.

**LATROBE ELECTRIC
STEEL COMPANY**
LATROBE, PENNSYLVANIA

the federal view

*this week in
washington*

by Eugene J. Hardy



Free Market Steel—Despite optimism among some Washington officials, NPA knows steel supply will be tighter than a drum for at least the remainder of 1951—both for allocation under CMP and for the free market. Manly Fleischmann, NPA Administrator, tells *THE IRON AGE* that more than half of current steel output will have to be programmed under CMP.

This is as far as Mr. Fleischmann will go in forecasting until after steel requirements have been filed this month by claimant agencies and listed industries. But this means that less than 50 pct of overall production will be left on the free market—a figure not too widely separated from industry's estimate (*THE IRON AGE*, Apr. 23, p. 109-110). It also means a greater impact than appears on the surface—since a sizable portion of the so-called free steel must inevitably consist of some of the less sought after types.

Priorities Within CMP—First concrete evidence has appeared to indicate that priority bands will be necessary within CMP. NPA hopes to hold these to no more than three bands. Their first appearance is likely to be in structural steel. This commodity, Mr. Fleischmann says, will be virtually non-existent for any but CMP programs for many months to come.

His agency is already braced to

receive "essential demands" for structural steel totaling from two to three times total output. This means that it must be tightly programmed even after the strictest screening of requirements. Even when armed with allocations, users may find themselves standing in line for acceptance of orders.

Delayed Expansion—Steel mill and other plant expansion programs face delay because of scarce structural steel. Steel expansion programs will get top billing in allocations and possible priorities, along with actual defense needs. But construction of steel plants and others which have received certificates of necessity, Mr. Fleischmann says, undoubtedly will have to be "scheduled in the order of their importance to the defense effort."

Plants which have little or no connection with defense production may have to wait as much as a year for structural steel. An order is being drawn which will tighten use of this product in all commercial construction.

Auto Unit Control?—NPA will meet with representatives of passenger car manufacturers this week. One of the problems to be threshed out is whether steel consumption by the industry should continue under the existing tonnage cutbacks.

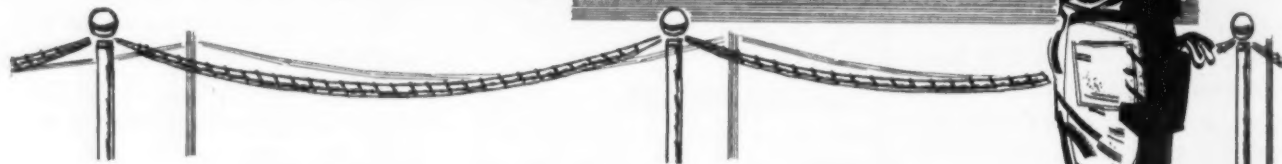
Some manufacturers have told NPA that it would be better to place production limitation under outright unit quotas. This suggestion is favored, officials say, by smaller firms which do not have the facilities of the larger manufacturers to shift production in order to make the most of the allowed steel, copper and aluminum.

Afraid of Squeeze—Smaller firms fear being squeezed in the rush for materials on the free market under CMP. The NPA does not think that passenger car production for the year will be reduced by more than 30 pct from 1950.

It bases this outlook mostly on the fact that the industry has maintained high production so far and is thus, quantity-wise, already off to a good start.

Nonferrous Subsidies—There is considerable sentiment for legislating subsidies to certain high-cost producers—particularly to copper, lead, and zinc producers. But enactment of this feature of the White House program stands out as being one of the few likely prospects for congressional endorsement.

As for some of Mr. Truman's other suggestions for "strengthening" the act—government-built plants, rent control over commercial properties, lower farm prices—the answer is a resounding "no," as far as Congress is concerned.



Here is a picture you helped us to paint

This month of May marks an important milestone in our relationship with you. It's the 50th birthday of our Indiana Harbor works.

Naturally we're a little proud of the growth of "The Harbor" from a sandy wasteland to an efficient steel-making facility. But, more than that, we're grateful to you . . . our

customers, suppliers and friends . . . for making the growth possible.

So, without the usual anniversary platitudes, we say sincerely, "Thanks."

(By the way . . . the picture on the right is rapidly becoming obsolete as we further expand our ingot producing facilities by another 20%).



INLAND STEEL COMPANY • 38 S. Dearborn Street, Chicago 3, Illinois

Sales Offices: Chicago • Davenport • Detroit • Indianapolis • Kansas City • Milwaukee • New York • St. Paul • St. Louis.

Principal Products: Sheets, Strip, Tin Mill Products, Bar Mill Products, Plates, Structural Shapes, Floor Plate, Piling, Reinforcing Bars, Rails and Track Accessories, Pig Iron, Coal Chemicals.



Cold war puts heat on

METAL POWDER

Copper and some machining capacity can be saved and a more heat resistant rotating band for artillery shells provided by using iron powder. A million bands may soon be ordered. Federal help for limited expansion of powder production is being considered.



By John Kolb
Assistant Editor

The shortage of copper, together with this metal's relatively low melting point, has spurred the Ordnance Corps' interest in iron powder rotating bands for shells. This could prove a boon to the powder metallurgy industry and its customers, present and potential. To date, it is the high velocity projectiles that this newest type of band has mainly been developed for and used on. However, test firing of iron powder bands on standard artillery ammunition is in progress. It is these medium velocity shells that are manufactured in the greatest quantity.

Although iron powder is the most likely material for this application at present, plastics and other wrought metals are also under consideration and development. While not all authorities in powder metallurgy agree, it has been said that the paraffin-impregnated iron powder bands have virtually a bearing-like action in the gun barrel. And because the band is porous in structure, it

conforms more easily and is more readily engraved by the rifling than solid metal. Firing tests have indicated that a satisfactorily tight seal against pressure is obtained and the band remains firmly seated after leaving the barrel.

Expansion would be required

As reported in THE IRON AGE, Feb. 15, 1951, p. 109, participation in a big munitions program would require an expansion in iron powder production to many times its present capacity. No one knows exactly how much expansion would be required, but according to one estimate if all rotating bands for a World War II-sized armament effort were made of iron powder, 60 million lb would be needed annually.

At present, the United States is producing only a small percentage of these estimated requirements. One report, described as "something more than just rumor," indicates that the Muni-

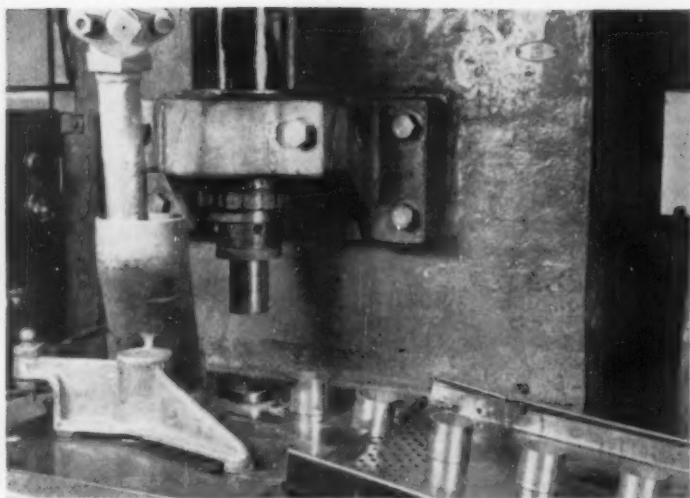


FIG. 1—Typical of the mechanical presses now being used by iron powder parts producers is this 80 to 100-ton capacity unit at Amplex Oilite Products, Chrysler Corp., shown turning out a machine part. Converting this press to rotating band production could be achieved just by changing dies and making adjustments in pressure and the automatic powder feed. The smaller sizes of bands have been turned out at a rate of hundreds an hour.

Metal powder (continued)

tions Board may help the industry expand iron powder production 3 million lb a month by providing priorities for materials and equipment. Some kind of tax relief may also be under consideration by the government.

Should production ever go as high as 60 million lb it would be expected to bring about a substantial reduction in the cost of powdered iron. The industry believes this would free them from the one remaining restriction to fast, large-scale growth.

The supply of pressing and sintering equipment is still good and most of the machines presently in use could be converted to rotating band production in very little time, Figs. 1 and 2. Production rates on some equipment are high and the finished bands would require little or no further work before being swaged onto shells.

While small orders for test firing purposes have been produced and large orders are likely to be placed in the near future, the decision to start full-scale production rolling must await further experiments and investigation. Such a decision must come from the Ordnance Corps, and it may be deferred for some time.

The use of metal powder for rotating bands and bullets is not new, either in this country or abroad. Pressed and sintered, 20-mm copper bands were used in World War II. Even today, despite the relatively high price of iron powder, rotating bands made from this material can be produced at a price competitive with other methods.

The greatest production of these powdered

iron parts occurred in Germany during the last war. According to statistics obtained by U. S. technical teams, at least 1 billion bands were manufactured during the war years. Most of the regular shell calibers were represented, from 20 mm up through 240 mm. The effect of this munitions program on iron powder production was very great, causing the tonnage produced to increase from 2600 tons in 1939 to 32,800 tons in 1944.

This compares with a total of 4125 tons of iron powder produced in the United States in 1950. An additional 6000 tons were imported from Sweden. There are four major producers in this country and Canada at present. They are making hydrogen reduced, electrolytic and carbonyl powders. One Swedish producer is presently building a new iron powder plant near Camden, N. J.

Raw materials are plentiful

At present, the fabrication of iron powder parts, the scarfing and cutting of stainless steels and the production of electronic cores each takes about 30 pct of the output of iron powder of all kinds. The balance goes into chemical, pharmaceutical and food products.

When and if expansion comes, plentiful supplies of raw materials and a selection of production methods will be ready for development. At present, the raw material used the most in the United States is mill scale. One powder producer is successfully processing scrap. Beneficiated, high grade iron ore itself is also used.

The principal methods for the production of iron powder at present are hydrogen reduction of iron oxides, electrolysis, thermal decomposition of carbonyls and the atomization of molten metal. This last method was widely used in Germany and it provides a high rate of production and excellent compacting characteristics. It is the hydrogen reduced powders that are used most widely in the fabrication of iron powder parts in this country.

As for German methods of production, one of two principal processes was employed, depending on the size of the finished bands. For larger shells, pressures of 16 tons per sq in were exerted on the top and bottom rams of presses which turned out one band at a time. The height

What price rotating bands?

When bids were requested on the production of iron powder rotating bands, the results were startling, to say the least. On the 90-mm size, prices per band ranged from \$1.65 down to 7¢, and on the 120's, from \$3.21 to 18¢! The reason? Vastly different equipment and production techniques, involving everything from one-at-a-time pressing to multiple-stage setups, from batch sintering to continuous systems.

of the powder fill was approximately three times the height of the pressed band, and the molded part was strong enough to withstand handling. Packed in iron boxes, the bands were then sintered between 1832° and 2012°F for about 2½ hr in a reducing atmosphere.

A certain amount of distortion, caused by uneven shrinkage, occurred in sintering. This was overcome by sizing in punch presses. The bands were then impregnated with paraffin wax to inhibit internal corrosion. The wax is also believed to influence compression strength and engraving effects.

Rotary presses having anywhere from 13 to 21 stages were used by the Germans for smaller rotating bands. They were equipped with gages which controlled the thickness of each band and their rates of production was phenomenal. By using Hametag iron powder, the pressed bands could be sintered as low as 1832°F.

The rotary presses caused a discrepancy in the weight of the bands, making it necessary to pass the sintered parts through automatic weighing machines. Here, too, sizing to correct distortion or uneven shrinkage was required. The stresses developed by work-hardening were relieved by annealing in the sintering furnace. To prevent exterior corrosion, they were bonderized and then dipped in cellulose varnish.

FIG. 2—A continuous sintering furnace of the type suitable for use in producing iron powder rotating bands.

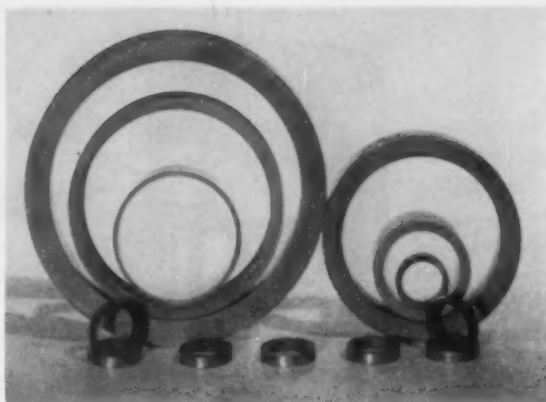


FIG. 3—Sintered iron rotating band blanks for 20 to 120mm projectiles, produced at the Watertown Arsenal.

At least some modification would be required before these German methods of production could be applied here. For one thing, much of the powders used in Germany were relatively coarse, having been made from almost anything that could be made to yield powder of the right chemistry. The bands so far produced in this country have all been made of powders under 100 mesh particle size. Fig. 3 shows the relative sizes of some experimental sintered iron bands made for various caliber projectiles.

Up to the present, much of the work on rotating bands has been done at the Ordnance Corps' only powder metallurgy facilities. These are in the Watertown Arsenal, Watertown, Mass. Some work was also done under contracts issued to Purdue University and Stevens Institute. This laboratory produced the first iron powder rotating bands ever made in this country, during World War II. Some 25,000 bands for development and test purposes have been produced to date.

Bands are now in production

A powder metallurgy sub-committee of the American Ordnance Assn. is assisting the Ordnance Corps in an industrial advisory capacity. The committee members are civilian experts, and they do not serve as representatives of any particular companies.

Specifications data for iron powder rotating bands for high-velocity shells are now being obtained at the Watertown Arsenal. An order for 5000 90-mm bands for test firing purposes is now in production at Powdered Metal Products, Inc., Franklin Park, Ill. This concern is making 120-mm blanks, in addition. The Amplex Div. of Chrysler Corp. is also making some rotating bands for standard ammunition.

The main reason for the difference between the particle size of the iron powder used for rotating bands in Germany and that used here is primarily a matter of conforming to common practice in this country. Also, the finer powders (minus 100 mesh) are the most readily available. While



FIG. 4—This is the 100-ton laboratory hydraulic press used to form experimental 90 mm rotating bands from iron powder.

Metal powder (continued)

the use of smaller particle sizes is not mandatory, they do provide certain advantages. Higher tensile strength and greater ductility was obtained in the finished bands.

The iron powders used by the Watertown Arsenal powder metallurgy laboratory and by Merriman Bros., Inc., were made by hydrogen reduction of mill scale. Some industry representatives have stated that this is the material most likely to be involved in large-scale production of bands in this country.

As in German production, the powder fill was made at a ratio of approximately 3:1. It was found that bands for 90-mm projectiles required 60 tons per sq in. pressure and a 100-ton capacity press was used. For the larger 120-mm bands, something over 100 tons per sq in. was required. A 400-ton press was used for this item.

Sintering of the bands was done at temperatures ranging around 2012°F for about an hour in a hydrogen atmosphere furnace. It is believed that further research will make it possible to employ higher temperatures so that sintering time can be reduced, perhaps by as much as 50 pct. Figs. 4 and 5 show the laboratory press and furnace equipment used at Watertown Arsenal for small experimental lots of sintered bands.

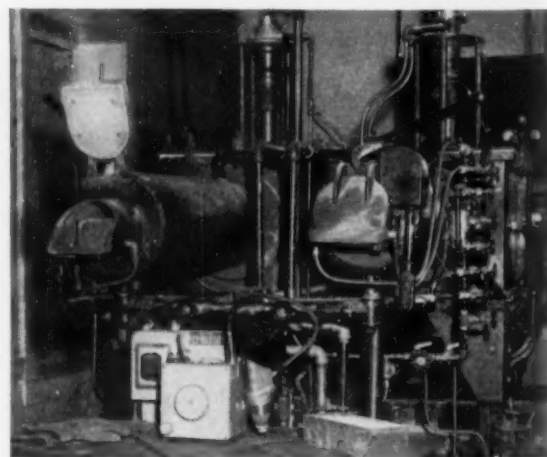
Only nominal precautions were required to minimize distortion. Unlike German practice, sizing or coining was not necessary and, therefore, no annealing was required. Some correction of size and shape is automatically accomplished when the bands are seated on the shells. A 37-mm projectile is shown in Fig. 6 before and after being fitted with an iron powder rotating band. The final contours of the band are obtained by a machining operation.

The 90-mm band blank presently being procured weighs 5.5 oz, has an ID of 3.5 in., a wall thickness of 0.25 in. and an axial length of 0.5 in. The 120-mm blank weighs 14 oz, has an ID of 4.75 in., a wall thickness of 0.5 in. and an axial length of 0.5 in. It is in axial length that iron rotating bands are markedly different from those made of gilding metal, which were often 2 to 3 in. long.

A tensile strength of the order of 13,000 to 15,000 psi is regarded as satisfactory in iron powder blanks, together with an elongation value of 3 pct and a density of 5.5 to 5.8 g per cc. Paraffin, 3 pct by weight, is used to impregnate the voids in the bands.

Density increases somewhat upon the seating of the band on the projectile, generally to around 6.0 g per cc. Standard tests for determining

FIG. 5—Two of the hydrogen atmosphere electric furnaces used for sintering experimental rotating bands at the Watertown Arsenal.



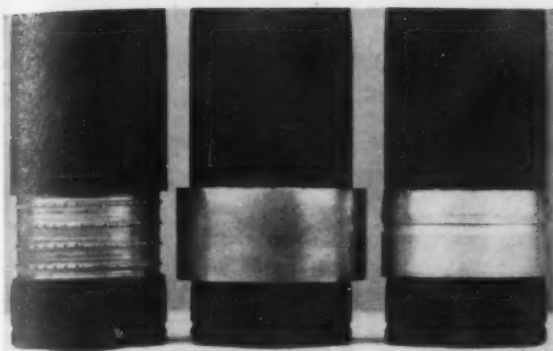


FIG. 6—From left to right, a 37mm projectile is shown before banding, after banding with a sintered iron powder blank and with band machined to final contours.

ductility and tensile strength of iron powder rotating bands are now being developed at Watertown Arsenal.

While the blanks are finally dipped in paraffin, no bonderizing or varnishing has been required. It is believed that some such protective coating would be needed in large scale production.

The author wishes to thank G. L. Bachner of Powdered Metal Products Corp. of America, A. M. Burghardt of the Powder Metallurgy Laboratory, Watertown Arsenal; C. E. Hanson of the Plastic Metals Div., National Radiator Co., A. J. Langhammer of Amplex Oilite Products, Chrysler Corp. and M. T. Victor of International Powder Metallurgy Co. for the helpful advice and data that made this article possible.

Aluminum boxes inert-arc welded

A new method of machine-welding large quantities of rectangular aluminum boxes has been developed at Federal Telephone and Radio Corp., Clifton, N. J. The boxes are mass-produced in three different styles for enclosing military communications equipment, and range in size from 3x6x12 to 5x5x14 in.

The system was worked out by Federal's sheet metal department, in cooperation with the Linde Air Products Co. In addition to providing fast, efficient production, the method enables a type of fabrication that would have been impractical under other methods because of heat distortion and resultant high production costs.

What Federal needed was a mass-production method from which material warpage and rejections would be virtually eliminated. And a method of production had to be devised in which corners of the rectangular boxes could be welded without burning through the material when the welding machine was rounding the sharp corners of the box.

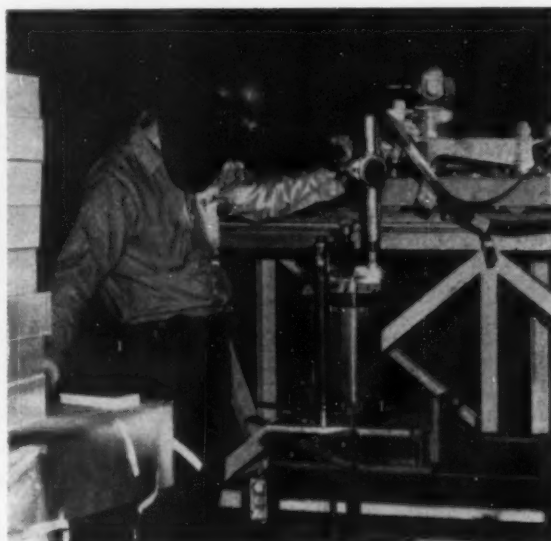
The method finally evolved and now in operation at Federal ingeniously overcomes these problems.

For the actual welding, Heliarc welding, a method of inert gas-shielded arcwelding without flux, is being used. In Heliarc welding, an arc is struck between the work and a single tungsten electrode while an inert gas flows around the weld area, shielding the weld metal and preventing oxidation. Corrosion problems from flux are

eliminated, and there is no possibility of flux inclusions.

The Federal method utilizes a standard shape-cutting machine in conjunction with the Heliarc machine welding torch, precision jigs and fixtures. The fixtures maintain close tolerances and accurate fits. Copper backup bars at the corners of the box conduct heat away to prevent burning. Distortion is kept to a satisfactory minimum.

WELDING ALUMINUM box for communications equipment. Accurate fixtures, with large copper backup bars at box corners, minimize heat distortion.



Special blast cleaning equipment has increased cleaning production as much as 40 pct. Two speed drives on monorail conveyers through blast cabinets, multi-angle blast streams and rotating tables are just some of the ingenious equipment now in use.

Ingenious blast cleaning adapted to MASS PRODUCTION



By W. I. Gladfelter

Chief Engineer

Pangborn Corp., Hagerstown, Md.

It is often necessary to design blast cleaning machinery especially to fit the part, the production pace and the material handling system which precedes and follows the cleaning unit. In more cases than not, standard equipment will fill the bill—for the varieties, sizes and types of machines offered for airless centrifugal blasting in the past few years have multiplied enormously.

But many situations justify engineering ingenuity beyond the limits of standard equipment. For example, cylinder blocks, heads, transmission cases and clutch housings are being cleaned in the Detroit area at a rate of 240 hook-loads per hr as against a prior 180.

The proportion of actual blasting time in the total process time has been jumped 25 to 40 pct in numerous instances; and special transfer systems adapted to handling flanged axles, corrugated rolls, oil drums, pipe and rod, forgings, light nonferrous components, 20-ton castings and tiny carbon disks have integrated the blasting machine with the continuous-flow handling methods fore and aft of the blasting process. It is noteworthy that blast cleaning is becoming so automatic and adaptable that it is displacing acid-pickling in many zones of production.

To guide the process engineer who wants to

convert a "bottleneck" cleaning operation into a production line the fundamental rules are:

- (1) *never set the part down if it can be avoided,*
- (2) *speed up the motions between blasting stations,*
- (3) *turn or oscillate the part before the blast stream so that as many faces and contours as possible may be blasted at each station,*
- (4) *consider loading, unloading, and adjacent processes as part of a single integrated system,*
- (5) *plan the part transfer system so that any secondary, stray or deflected streams of abrasive strike work rather than fixtures or chamber walls,*
- (6) *consider worker-fatigue and the operator's motions in loading and unloading,*
- (7) *pay special attention to seals and partitions, to save abrasive and prevent its striking the operator, and*
- (8) *think freely with regard to the aiming and orientation of blast streams.*

Basic Methods Are Varied

The principal methods of handling work in blast chambers are classified in Fig. 1. Others are doubtless feasible, but each of these six has been the subject of recent development and successful application.

The rocking barrel for batch loading, Fig. 1A, and the GO barrel for tumbling work progres-

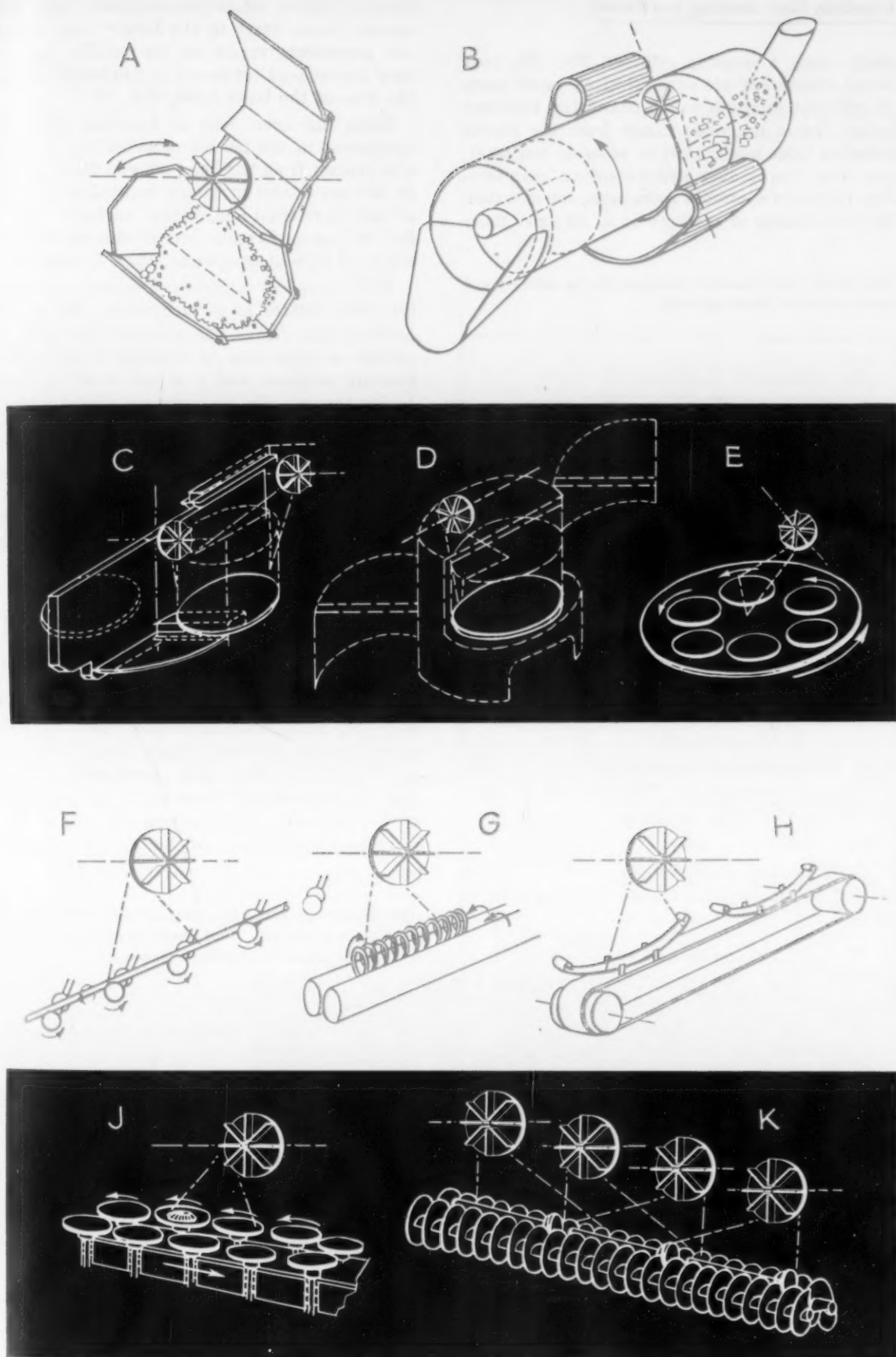
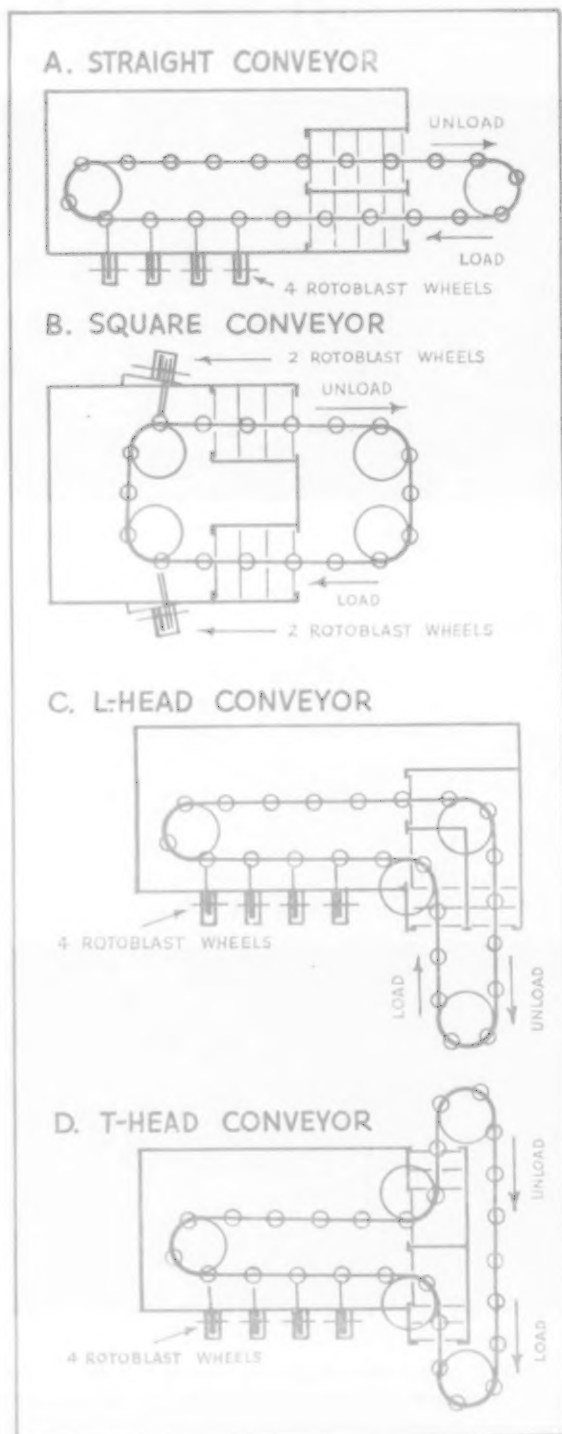


FIG. 1—Methods of blast cleaning illustrated above include: A, batchloaded rocking barrel; B, rotating cylinder through which work progresses; C, D and E are a variety of blast cleaning tables; F, roller conveyer for rod-like parts; G, roller conveyer for springs; H and J, belt and special chain conveyers; K, screw-type for flange-headed parts.

Ingenious blast cleaning (continued)

sively along a rotating cylinder, Fig. 1B, have found widespread use with relatively small parts of sufficient strength to withstand the tumbling action. Table machines range from the simple indexing table partitioned to separate the blasting from the loading and unloading chambers, Fig. 1C, to the enormous room table, car-mounted, for the blasting of castings up to 20 tons. Many

FIG. 2—Common conveyer arrangements for entering and leaving monorail blast cabinets.



blasting tables rotate continuously, some with smaller tables inset in the larger table so that the workpieces rotate on the smaller table as they are indexed (or moved continuously) around the axis of the large table, Fig. 1E.

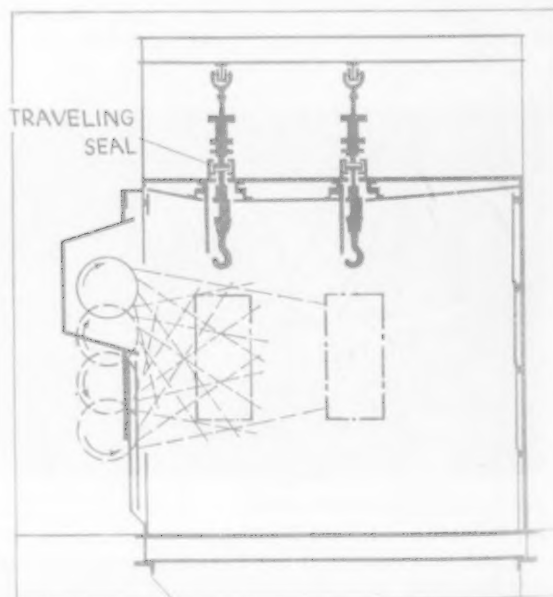
Much has been done in tumbling and table equipment in the matter of orienting the abrasive stream from the blast wheels. Blast streams at 45° are useful in giving equivalent coverage of both horizontal and vertical surfaces. But the field of "specials" really begins with the monorail conveyer type of equipment, Figs. 2, 3 and 4.

With monorail conveyer blasting equipment, the work rotates as it progresses. To save all possible time delays, the conveyer moves at two speeds—a rapid rate of perhaps, 8 ips between blasting stations, and a slower rate of, about, ½ ips through the blast stream. There is, however, a translation in front of the blasting stream—not a dead stop—so that the sidewalls of deep recesses in the workpiece do not shield the direct impact of the abrasive stream on critical zones. Production increases of up to 40 pct are not uncommon as the result of the two-speed drive idea.

All Abrasive Blast Is Used

In most of the well-designed monorail-conveyer machines the conveyer makes a U-turn in the blasting chamber and the work makes a second pass in a line directly behind the primary blasting line. Thus, abrasive which misses a workpiece directly in front of any blasting station, or is deflected from that workpiece, is more likely to strike a workpiece on the returning line of the conveyer. The diagrams in Fig. 2 show a variety of methods of coordinating loading,

FIG. 3—Vertical section through a monorail cabinet showing traveling seal labyrinth. Blast wheels at different levels permit various angles of abrasive impingement.



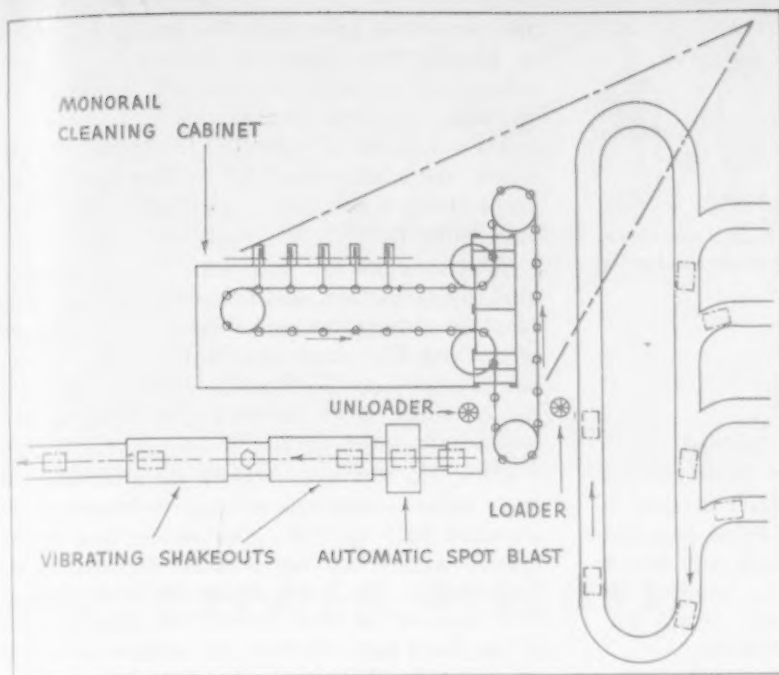


FIG. 4—Full integration of grinding, automatic blasting, spot blasting and shakeout is used in cleaning Ford engine blocks.

unloading and other process steps with the conveyor system.

No small amount of attention in monorail blasting equipment has been paid to the traveling seal—to keep all of the abrasive in the machine and protect chains, sprockets, hanger couplings and other parts external to the blast chamber. The most effective traveling seal is composed of parallel plates hinged, chain-like, high on the hooks or trees which carry the work. They operate inside labyrinth channels on both sides of the seal, Fig. 3.

As in all continuous blasting equipment, the continuous cleaning, classifying, separation and reuse of abrasives is paramount. Today steel abrasives are separated with 99 pct efficiency.

With heavy work and two-speed drive the matter of hook swinging may become a problem. This can be controlled by the simple ingenuity of double chains operating at two levels so as to keep work-hooks running through links in both chains always in a vertical position.

Roller conveyer machines coordinate nicely with continuous handling systems for parts that are not easily hung. They also permit the spiraling of rod or tube during blasting, and the transport of sheet metals and flat forms through blast chambers. Spiraling of rod-like work is obtained by setting the rolls at an angle to the axis of work travel, or shaping the roll or providing guides to keep the work in line, Fig. 1F.

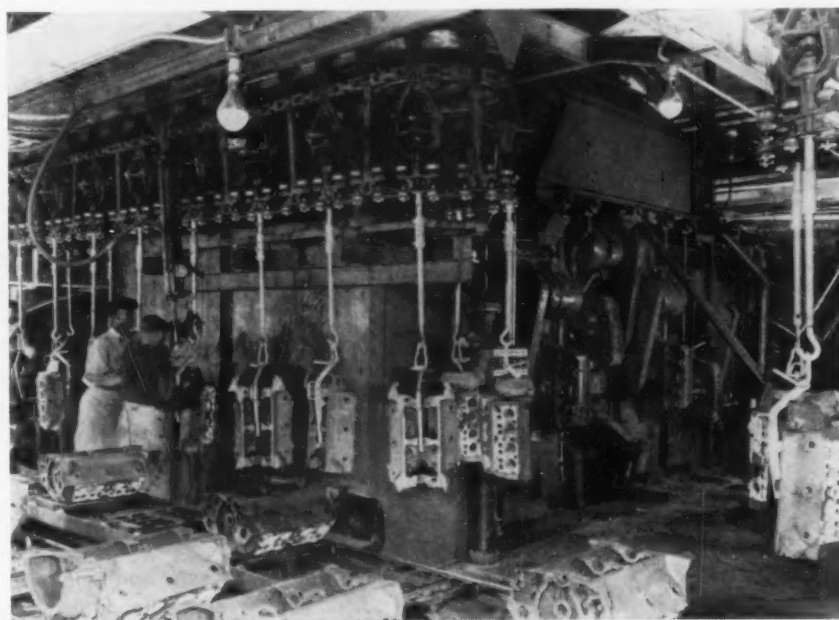


FIG. 5—Blocks taken from conveyor table and placed on monorail hooks prior to entering blast cabinet. This is a photo of the cleaning line drawn in Fig. 4. For photo perspective see dashed lines in Fig. 4.

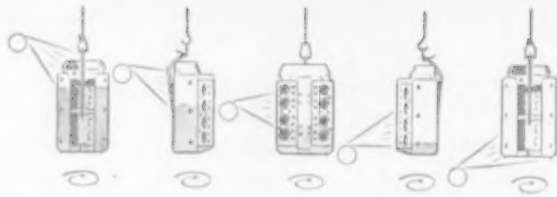


FIG. 6—The engine blocks in Fig. 5 rotate as shown above. At each of the five stations a different angle of abrasive impingement is employed.

Ingenious blast cleaning (continued)

Roller-conveyed work is often blasted simultaneously from both sides—down from the top and up from the bottom. The blast stream is directed between the rolls, so that roller abrasion is minimized. Pipe skelp, the two edges of which are later butt welded together, is handled by roller conveyor under blast streams which impinge only on the very edges of the skelp.

An odd variation of the roller conveyor recently applied to the cleaning of serrated and corrugated rolls, uses two rollers running lengthwise through the machine but tilted at an angle of 4° with respect to one another. In this case the workpiece travels with its axis approximately parallel to the rollers between which it is supported, and is spiraled rapidly as it proceeds forward relatively slowly. Coiled springs and military ordnance items can be cleaned in such equipment, Fig. 1G.

Another unit handles small carbon disks in 74 fitted notches around a 2-ft diam wheel that is fed and discharged in the manner of a water wheel. Another carries rotating chucks, 20 of them, around the rim of a horizontal wheel, the chucks rotating at 50 to 100 rpm and the table rotating at $\frac{1}{2}$ to $1\frac{1}{8}$ rpm. In another instance

the nameplate area on a fire extinguisher case is blasted from below by resting in a fixture which both supports the case and shields all but the nameplate area from the blast.

Figs. 1H and 1J show the movement of work under the blast wheel by fixtures carried on, respectively, a belt and a special chain (the table axes being through the chain link joints).

A screw-conveyor unit with two screws parallel to one another, and intermeshed, has proved ideal for automotive rear axles which are flanged at one end. The shaft rests in the valley between the screws and is thereby rotated while the flange drops down between the screw spirals and advances the work, Fig. 1K.

Here, the conveyer screws do a double job, their lower projections serving to transport the abrasive back to the classification and return system while their top portions support, rotate and advance the work under the blast stream. The plane of the blast stream lies along the axis of the shaft being blasted, the stream being only $1\frac{1}{2}$ in. wide. This application has been so effective that the work rate is 1200 axles per hr.

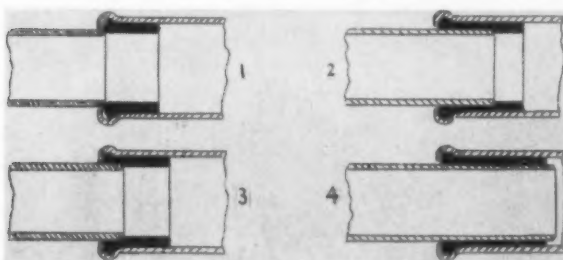
Many Specials Possible

Frequently the basic part handling methods can be combined—or a standard machine adapted to a special use. Railway bolsters, for example, are blasted in what might be termed a four-station table machine, except that the table is an open structure of supporting members so fashioned as to position the bolster exactly as required with respect to the abrasive stream. Car-bottom units are particularly handy with extremely heavy castings.

A midwestern manufacturer of lift trucks uses an 8-ft rotating table machine, but runs an auxiliary roller conveyor for 20-ft long pieces through the blast chamber.

New threadless pipe joint good to 3500 psi

A new type of simply-made joint for pipe utilizes a rubber sleeve and has been shown leak-proof at pressures up to 3500 psi. Handled in this country by the Institute of Inventive Research, the Keeseal joint is claimed to be cheaper and faster to make than other types of joints.



Pipe noise is said to be reduced due to the insulating action of the rubber as well as the more even flow through the joints.

The joint is, in effect, a plain tube with a half-round groove at the open ends, into which is inserted a special rubber sleeve. The sleeve thickness is double the clearance between the pipe and the inside wall of the joint. Thus when the pipe is inserted, the rubber sleeve, anchored in the groove at the open end, is drawn out along the length of pipe. The accompanying drawing shows the action of the sleeve as a pipe is inserted.

Water or other pressure in the joint tends to force the rubber sleeve back into its original shape and thickness, thus increasing the positive seal between pipe and inside wall.



FOUNDRYMEN DISCUSS

technology for defense

Foundrymen gathered at the Niagara Frontier to discuss new and advanced technology in preparation for the swing to defense work.

Scrap and alloy shortages are causing great concern in the industry.

More than 3000 representatives of the castings industry met last week in Buffalo for the 55th American Foundrymen's Society Foundry Congress, making a record attendance for a non-exhibit year. Pointing up the theme of "Technology For Defense," the various technical sessions, symposia, round tables and shop courses included papers on all aspects of foundry technology by top authorities of the industry.

National Production Authority officials were on hand to discuss the foundry industry's present and future role in national defense with the foundrymen and manufacturers of foundry equipment and supplies. The volume of foundry production going into the defense program is still small, amounting to only about 10 pct of total output. Foundrymen assert that the changeover will come as fast as the government makes up its mind as to what is wanted. However, the industry expects to see large-scale manufacture of tank castings and other items by the end of this summer or in mid-autumn.

Highlight of the technical program was the day-long symposium on "Principles of Gating," sponsored jointly by the Aluminum & Magnesium, Brass & Bronze, Gray Iron, Malleable, and Steel Divisions of AFS. Leading experts in this field dealt with tentative design of horizontal gating systems for light alloys and the re-

lation of casting quality to gating practice. Also covered were considerations in the feeding of castings, an interim report on gray iron risering research was presented.

A portion of the symposium was given over to discussion periods on gating and risering as it applies to each of the AFS divisions. Other papers were given on the why of gate and feeder design, trends in malleable gating and risering, and de-

AFS NATIONAL PRESIDENT for the 1951-52 term is W. L. Seelbach, right; I. R. Wagner, left, was elected to the vice-presidency.





HONORARY LIFE MEMBERSHIP in AFS was presented to W. L. Woody, right, upon completion of his term as 1950-51 national president of the society. W. W. Maloney, left, is AFS secretary-treasurer.



GOLD MEDAL AWARDS were presented at the annual convention. A. A. Boyles, left, United States Pipe & Foundry Co., received the John H. Whiting Gold Medal; V. A. Crosby, center, Climax Molybdenum Co., was recipient of the John A. Penton Gold Medal; and T. W. Curry, right, Lynchburg Foundry Co., was awarded the Peter L. Simpson Gold Medal.

AFS convention (continued)

velopments in gating of small and medium malleable castings.

Evening shop courses this year were given on malleable foundry sand control, metal pouring temperature control, and shell molding and use of resin binders. Interest was especially high in the latter; W. C. Jeffrey, Jackson Industries, Birmingham, described use of resin binders for raising core room output, and B. N. Ames, New York Naval Shipyard, Brooklyn, spoke on the extensive work being done in shell molding.

Comparisons were made between castings from ordinary molding methods and those pro-

duced in shell molds to show the largely superior properties obtained with the new technique. Examples were shown of various castings made by shell molding to illustrate the close tolerances, excellent surface finish and soundness.

Sessions on sand testing and control, plant equipment and operation, refractories, heat transfer, and melting and pouring were among the many other topics of general interest at the 4-day meeting. Exchange papers this year were by: E. S. Renshaw, head foundry metallurgist, Ford Motor Co., Ltd., Dagenham, England, representing the Institute of British Foundrymen, on basic cupola melting and its possibilities; R. Dyke, Defense Research Laboratories, Mairbyrnong, Victoria, represented the Institute of Australian Foundrymen with a paper on the modification technique of aluminum-silicon alloys; and Holger Pettersson, Metallografiska Institute, Stockholm, Sweden, on an investigation of the penetration of steel into molding sands.

Foundrymen elect new officers

The Charles Edgar Hoyt Annual Lecture, one of the highest AFS honors, was presented by J. C. Zeder, director of Engineering & Research, Chrysler Corp., Detroit, who spoke on "The Management of Industrial Research." Dr. Kenneth McFarland, Superintendent of Schools, Topeka, Kan., climaxed the Annual Banquet with an address entitled "Which Knew Not Joseph."

Election of new officers at the convention placed W. L. Seelbach, president and general manager of Superior Foundry, Inc., Cleveland, at the helm, succeeding W. L. Woody, vice-president and general manager of National Malleable & Steel Castings Co., Cleveland, as national president of AFS. Vice-president elect of the society for the 1951-52 term is I. R. Wagner, director of Electric Steel Castings Co., Indianapolis.

Elected to serve 3-year terms as national directors of AFS are: H. W. Dietert, president, Harry W. Dietert Co., Detroit; A. L. Hunt, works manager, National Bearing Div., American Brake Shoe Co., St. Louis; J. T. MacKenzie, technical director, American Cast Iron Pipe Co., Birmingham; A. M. Ondreyco, plant manager, Vulcan Foundry Co., Oakland, Calif.; and M. J. O'Brien, Jr., works manager, Symington-Gould Corp., Depew, N. Y.

AMONG THE PROMINENT foundrymen assembled at Buffalo were, left to right: Robert Gregg, American Meter Co., Alhambra, Calif.; L. D. Wright, plant mgr., U. S. Radiator Co., Geneva, N. Y.; I. R. Wagner, director, Electric Steel Castings Co., Indianapolis; E. C. Troy, foundry engineer, Palmyra, N. J.; James Thomson, chief works engineer, Continental Foundry & Machine Co., East Chicago, Ind.; and V. J. Sedlon, president, Master Pattern Co., Cleveland. All, with the exception of Mr. Wagner, are national directors of AFS.



VERTICAL SOLIDIFICATION

of
steel ingots
studied



By J. W. Spretnak

Associate Professor of Metallurgy
Ohio State University
Columbus, Ohio

An important phase of the solidification of steel ingots is the nature and extent of the "vertical solidification." Freezing of the ingot proceeds from the bottom toward the top of the ingot as a result of heat abstraction from the bottom of the ingot mold. It is known in a general way that, after the ingot mold has been filled with molten steel, a thin skin of solid steel is quickly formed and at the very early stages of freezing, the ingot resembles a paper bag full of water.

In the process of solidification, three sources of shrinkage are involved: (a) *Shrinkage in the liquid state in cooling of the liquid to the freezing temperature.* (b) *Shrinkage involved in going from the liquid to the solid state, and* (c) *Shrinkage in the solid state on cooling down from the freezing temperature.*

This shrinkage in the skin of the partially frozen ingot causes the ingot to pull away from the ingot walls so that further heat abstraction

in transverse solidification occurs essentially by radiation. Therefore, unless the ingot is inadvertently caused to "hang", the partially frozen ingot then settles on the bottom of the mold. Thus in vertical solidification, there is actual contact to some extent so that heat abstraction to the bottom of the mold can proceed both by conduction and radiation. Therefore, heat abstraction should be faster through the bottom than through the sides of the mold, at least during the initial period of solidification.

Much attention has been directed to transverse solidification in ingots. Recently it has been demonstrated¹ that in killed steel ingots which have both a columnar and an equi-axed zone, the transverse solidification curve (distance frozen v. elapsed time) is described by two parabolas, one for the columnar crystallization of the form and one for the equi-axed crystallization of the form, as shown in the box.

However, at any point on the vertical axis of

Heat removal in transverse solidification occurs by radiation while in vertical solidification both radiation and conduction take place. Vertical solidification particularly in lower portion determines nature of segregation and extent of "A" and inverted "V" porosity patterns.

Solidification of ingots (continued)

the ingot, solidification across the ingot may be completed as a result of one of the two following mechanisms: (a) *junction of vertical and transverse solidification* (b) *junction of transverse solidification alone*.

It is, therefore, important to learn about the kinetics of vertical solidification and its extent in ingots, since this contribution to the freezing process undoubtedly has an important role in determining the nature of the ingot structure. Some of the factors which possibly could be affected by the extent of vertical solidification are: (a) *the pattern of macro-segregation* (b) *formation of "A" and inverted "V" porosity patterns*, and (c) *directional properties in the ingot—pronounced in the columnar zone, lesser degree in the equi-axed region*. The technical importance of the structure of the bottom third of the ingot has been emphasized by the large proportion of rejections in certain ordnance parts processed from this part of the ingot.

Equations express vertical solidification

The data on the freezing of 1 pct C, 1 pct Cr steel ingots by Nelson² were used because of the relatively extensive measurements on vertical freezing made in this study. These data on the four ingots studied by Nelson, employing the bleeding technique, are plotted in Fig. 1. There appear to be two distinct sections of the curves. The first section is parabolic in nature; it is terminated by an abrupt increase in slope, which indicates an increase in the rates of solidification. The equations for the initial parabolic curves were established and are presented in Table I. They are parabolas of degree varying from 0.54 to 0.60.

TABLE I
VERTICAL SOLIDIFICATION CURVES
INITIAL PORTION

| General form: $D = Kt^n$ | |
|------------------------------|--------------------|
| 13 in. \times 13 in. D_v | $= 1.387 t^{0.54}$ |
| 17 in. \times 17 in. D_v | $= 1.198 t^{0.60}$ |
| 20 in. rd. short D_v | $= 1.266 t^{0.60}$ |
| 20 in. rd. long D_v | $= 1.648 t^{0.55}$ |

TABLE II
VERTICAL SOLIDIFICATION CURVES
SECOND PART

| General form: $D_v = a + b t^2$ | |
|---------------------------------|------------------------|
| 13 in. \times 13 in. D_v | $= -5.378 + 0.034 t^2$ |
| 17 in. \times 17 in. D_v | $= -4.768 + 0.014 t^2$ |
| 20 in. rd. short D_v | $= -3.446 + 0.009 t^2$ |
| 20 in. rd. long D_v | $= -4.192 + 0.016 t^2$ |

TABLE III
TRANSVERSE SOLIDIFICATION CURVES
SECOND PARABOLA

| General form: $D_t = a + b \sqrt{t}$ | |
|--------------------------------------|----------------------------|
| 13 in. \times 13 in. D_t | $= -0.447 + 1.19 \sqrt{t}$ |
| 17 in. \times 17 in. D_t | $= -0.485 + 1.12 \sqrt{t}$ |
| 20 in. rd. short D_t | $= -0.479 + 1.16 \sqrt{t}$ |
| 20 in. rd. long D_t | $= -1.145 + 1.39 \sqrt{t}$ |

The type of equation which approximates the second portion of the vertical solidification curves next was established. It was found that the general expression, $D_v = a + bt^2$, adequately fits the data for this part of the curve. In this expression " D_v " is the distance frozen vertically from the bottom of the ingot, " t " is the elapsed time in minutes, and " a " is a constant. The equations for the second part of the vertical solidification curves are given in Table II and plotted in Fig. 2. The transverse and vertical solidification curves, both have two distinct branches. The transition from the first to the second parabola in transverse solidification corresponds to the end of columnar crystallization. It is also quite likely that the transition

Transverse solidification curves

$$D = K_1 \sqrt{t} \quad \text{for columnar crystallization}$$

$$D = a + K_2 \sqrt{t} \quad \text{for equi-axed crystallization}$$

Where D = distance frozen; t = elapsed time; K_1 and K_2 are constants.

from the initial parabolic curve to the quadratic curve also corresponds to the end of columnar crystallization.

That columnar crystallization in these cases was restricted is quite likely, since the steel was made in the electric furnace. Previous evidence has indicated that for a steel of a given composition, columnar crystallization tendency is much less if melted in the basic electric furnace than if melted in the basic open hearth furnace.

Assuming that the derived equations for the second portion of the vertical solidification curve is valid up to the time that solidification is completed transversely as a result of transverse solidification alone, it is possible now to calculate the extent of vertical solidification in the four ingots. Taking into account the taper of the ingot, the average cross-sectional dimension of the ingot was used to calculate the time required for the completion of transverse solidification in the bottom half of the ingot. These times were calculated from the equations for the second parabola of the transverse solidification curves presented in Table III.

Solidification times compared

The values of time for completion of transverse solidification, which in turn gives the time at which vertical solidification is pinched off, were substituted in to the equations for the second part of the vertical solidification curves (Table II), thus yielding the expected height of vertical solidification. The results of these calculations are given in Table IV. Salient of these calculations is the extent of vertical solidification so obtained, ranging from 37 pct to 98 pct of the total ingot height. Thus, in the 20 in. rd., short ingot, vertical solidification would be expected to proceed practically to the hot top. No correlation appears between the calculated extent of vertical freezing and the mold ratio.

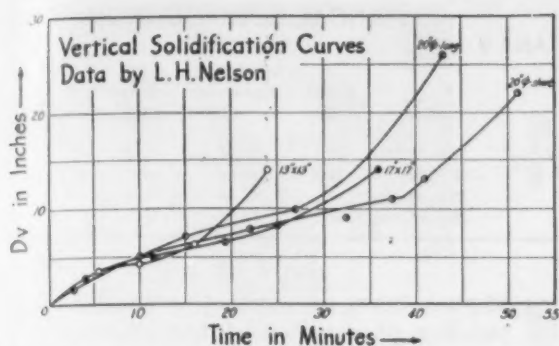


FIG. 1—Nelson's data for vertical solidification.

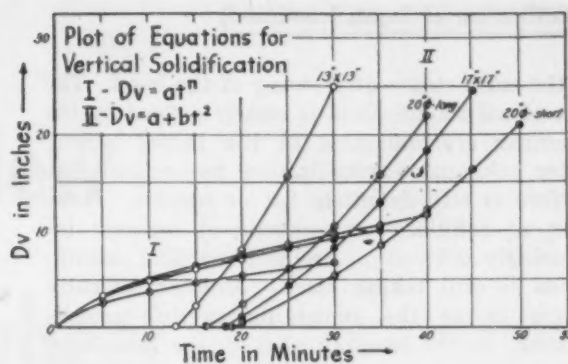


FIG. 2—Plot of the two equations representing the course of vertical solidification.

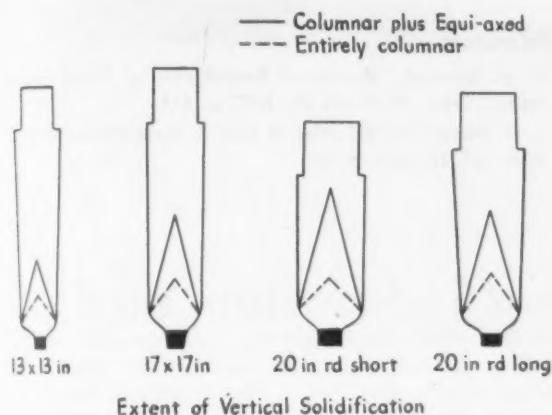


FIG. 3—Plot of extent of vertical solidification for the actual case of columnar plus equi-axed crystallization and for the hypothetical case of entirely columnar crystallization.

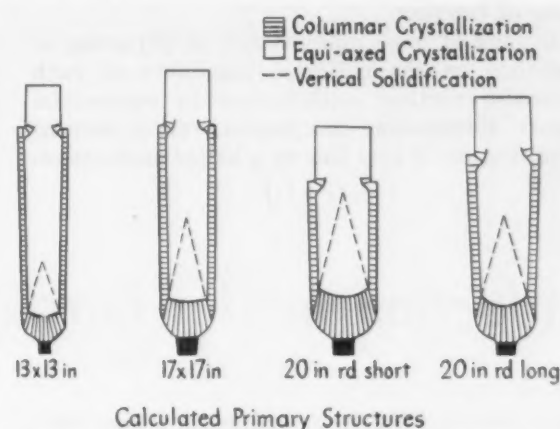


FIG. 4—Primary ingot structures calculated from solidification data.

Since the calculated extent of freezing was much higher than expected, it was of interest to calculate the extent of vertical solidification if the structure were entirely columnar. This was done using only the equations for the first sections of the transverse and vertical solidification curves. The results of these calculations are presented in Table V and in Fig. 3, along with the results for the columnar plus equi-axed solidification. The expected extent of vertical solidification in the case of an entirely columnar crystal structure is much less than for the actual case in which both columnar and equi-axed crystallization took place. Thus, the apparently significant extension of vertical solidification as indicated by Nelson's data is a result of the secondary equi-axed crystallization. When the

structure is entirely columnar, vertical solidification is significantly restricted.

With the available data on the kinetics of transverse and vertical solidification, and using the first section of the solidification curves which corresponds with the end of columnar crystallization, it is now possible to calculate the primary ingot structures. The calculated primary structures are drawn to scale in Fig. 4. Also plotted as broken lines is the calculated extent of vertical solidification. Although no photographs of the actual ingot structures were available for comparison, these calculated structures compare favorably with observed structures of basic electric steel of similar composition.

Noteworthy in the experimental study of vertical solidification in ingots by the bleeding technique is the difficulty of deciding whether a measured height of freezing after a given time period is truly the result of the advancement of vertical solidification or the junction of transverse solidification. In general, it would seem safe to assume that if the cavity is a sharp "V" with a low angle of opening, it is then a result of the junction of transverse solidification. Likewise, if the advancing surface is flat or concave toward the bottom of the ingot, then this advance is truly that of vertical solidification.

This situation is not particularly a problem

TABLE IV
EXTENT OF VERTICAL SOLIDIFICATION

| Ingot | Height, in. | Mold Ratio* | L/W Ratio | Vertical Solidification, in. | Pct Height of Ingot |
|------------------|-------------|-------------|-----------|------------------------------|---------------------|
| 13 in. X 13 in. | 57 | 1.77 | 4.38 | 21.38 | 37.5 |
| 17 in. X 17 in. | 56.5 | 1.34 | 3.32 | 32.64 | 57.8 |
| 20 in. rd. short | 42 | 1.23 | 2.10 | 41.34 | 98.4 |
| 20 in. rd. long | 50.5 | 1.96 | 2.52 | 34.85 | 68.7 |

* Cross-sectional area of ingot divided by the cross-sectional area of the mold.

Solidification of ingots (continued)

in the early stages of freezing of the ingot. The directional solidification is clearly defined by the columnar crystallization in the initial period. After columnar crystallization has ceased, the surface is still definitely flat or concave. However, as solidification proceeds, it becomes increasingly difficult to decide if vertical solidification is still taking place. Another difficulty enters in as the remaining cavity becomes smaller. In the bleeding process, the remaining liquid at the bottom does not bleed out cleanly, but builds up an irregular structure which further obscures interpretation of the depth and mode of freezing.

In spite of these difficulties, it is intriguing to speculate on the indicated possibility of such extensive vertical solidification in commercial ingots. Recognizing this possible role of vertical solidification, it may lead to a better understand-

TABLE V
VERTICAL SOLIDIFICATION

| Ingot | Height, in. | Columnar + Equi-Axed, in. | All Columnar, in. |
|------------------|-------------|---------------------------|-------------------|
| 13 in. × 13 in. | 57 | 21.38 | 11.47 |
| 17 in. × 17 in. | 56.5 | 32.84 | 14.95 |
| 20 in. rd. short | 42 | 41.34 | 18.39 |
| 20 in. rd. long | 50.5 | 34.85 | 17.09 |

ing of such items as segregation patterns and the puzzling phenomenon of the inverted "V" center porosity, which seems to be a result of pulsating solidification in the central part of the ingot.

References

- ¹ J. W. Spretnak, "Kinetics of Solidification of Killed Steel Ingots," *Trans. ASM*, vol. 39, 1947, p. 569.
- ² L. H. Nelson, "Solidification of Steel in Ingot Molds," *Trans. ASM*, vol. 22, 1934, p. 264.

Induction heater hardens 15 different parts

A total of 15 different parts are being currently processed with a single induction heating generator at the Oliver Corp., Charles City, Iowa, at a cost saving of nearly half of previous heat treating costs.

The equipment used is a Westinghouse 50 kw, 450 kc, induction heating generator with a stand-

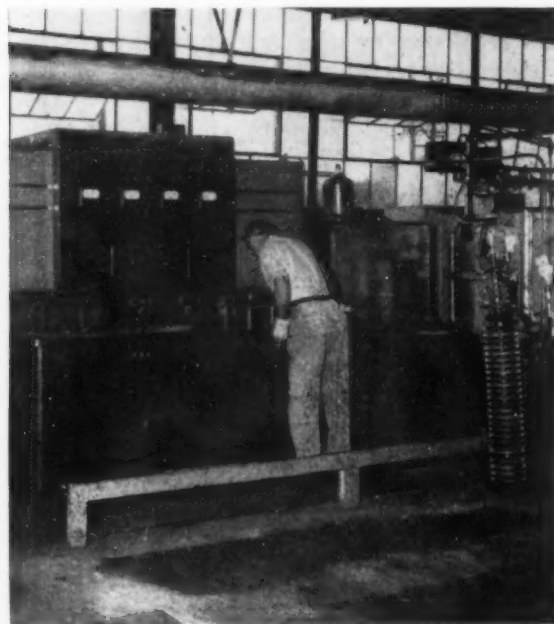
ard two-position work table. On the table is mounted a simple fixture and a standard manually-loaded vertical scanner.

Of the 15 parts on which this equipment is currently being used, eight are being processed on the vertical scanner, four on the fixture designed for single shot hardening of small parts or small areas of large parts, and three are treated partially on one and partially on the other. On the average, ten different setups are made each day. The time required for a setup is about 10 min.

The operator sets up the machine himself from a standard setup card previously prepared by a process engineer. Thus previous production setups can be readily duplicated without need for a highly-skilled technician. Time in process from the induction hardening setup to the main tractor assembly line is sometimes as low as 2 hr.

Production rates naturally vary with the different parts. Typical rates, in pieces per hr, are: Clutch couplings, 75; lever arms, 400; power takeoff shafts, 150; hydraulic valve seats, 800; flanged sleeves, 150; and hydraulic pump shafts, 125. The above listing also serves to illustrate the variety of types of parts handled.

Working on a standard cost system, Oliver calculates that its previous heat treating cost averaged 84¢ per 100 lb. With its induction heating equipment, costs calculated on the same basis average 48¢ per 100 lb. The speed and ease of changeover of this induction heating equipment has enabled installing a rigid inventory control system, while costs have been cut 45 pct.





New wheel

DOUBLES ABRASIVE BELT LIFE

A new type of contact wheel for backstand idler applications doubles abrasive belt life on most jobs where glazing normally occurs. The difference between the new wheel—called the “61,” and conventional wheels is in the design of the rubber serrations (or tread) on the periphery of the wheel.

The Carborundum Co., Niagara Falls, N. Y., developed the wheel in 3 years of research and testing. It will make the wheel available at no profit to Carborundum, will not go into the wheel business itself.

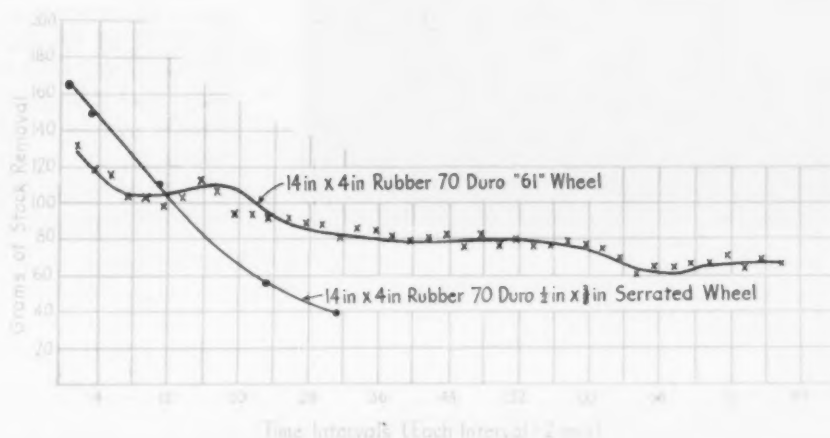
From the illustration, the nature of the serrations is indicated. They resemble a milling cutter, whereas the serrations on conventional wheels do not have the relief angle with narrow lands spaced widely apart. This design, Carborundum engineers say, causes a controlled breakdown in the bond of the abrasive belt and

reduces glazing. Moreover, since the new wheel now assumes a heavier part of the work load it reduces operator fatigue.

In a recent test in a customer's plant the new “61” wheel was applied in the flat surface grinding of auto bumpers prior to forming. Thirty-inch wide belts on Hill-Acme Co. wide-belt surface grinders were used. Previously 300 pieces were obtained per belt. With Carborundum's contact wheel, 600 pieces were obtained, with an increase of 128 pct in stock removal. Rejects were radically decreased and a much more consistent finish was realized from the first piece to the last.

In the grinding laboratory of Carborundum's Coated Products Div., comparative tests were made on a belt backstand grinder of all known types of rubber contact wheels. The same belt type was used in each case on low-carbon 1015T

Belt driven by new type wheel has 50 pct more abrasive left at the end of 82 min than does belt driven by conventional wheel at the end of 32 min. Abrasive is aluminum oxide belt, 14 ft x 4 in. at 7350 sfpm, grinding flat 1015T hot-rolled steel.

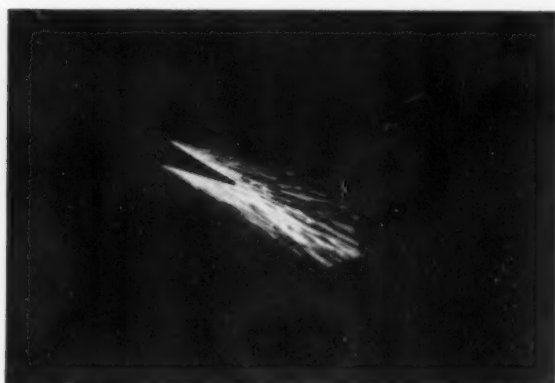


Abrasive wheel (continued)

descaled steel at 7350 sfpm. It was found that the new wheel permitted the removal of 2 to 4½ times the total grams removed with the use of the other wheels. Similarly, belt life was increased from 2 to 5 times. Average work life was increased from 1.8 to 5 times, and very heat sensitive work life from 1.7 to 3.8 times.



Both these pictures were taken with the same exposure (f5.6 at 1/50th sec). The photo below shows the spark from a belt after 24 min of operation with No. 50 Duro standard contact wheel. The other shows far more abrasive left on the same type belt after 80 min of operation with the new "61" wheel.



Pickle liquor

may yield cheaper iron powder

Another promising candidate has been added to the possible methods of producing the large amounts of iron powder that may be needed for artillery shell rotating bands and other big armament programs (THE IRON AGE, May 3, 1951, p. 95). The process was briefly mentioned in another earlier article (THE IRON AGE, March 8, 1951, p. 91) and involves the extraction of iron powder from waste pickle liquor and scrap aluminum. At present, indications are that the price may run substantially less than imported sponge iron.

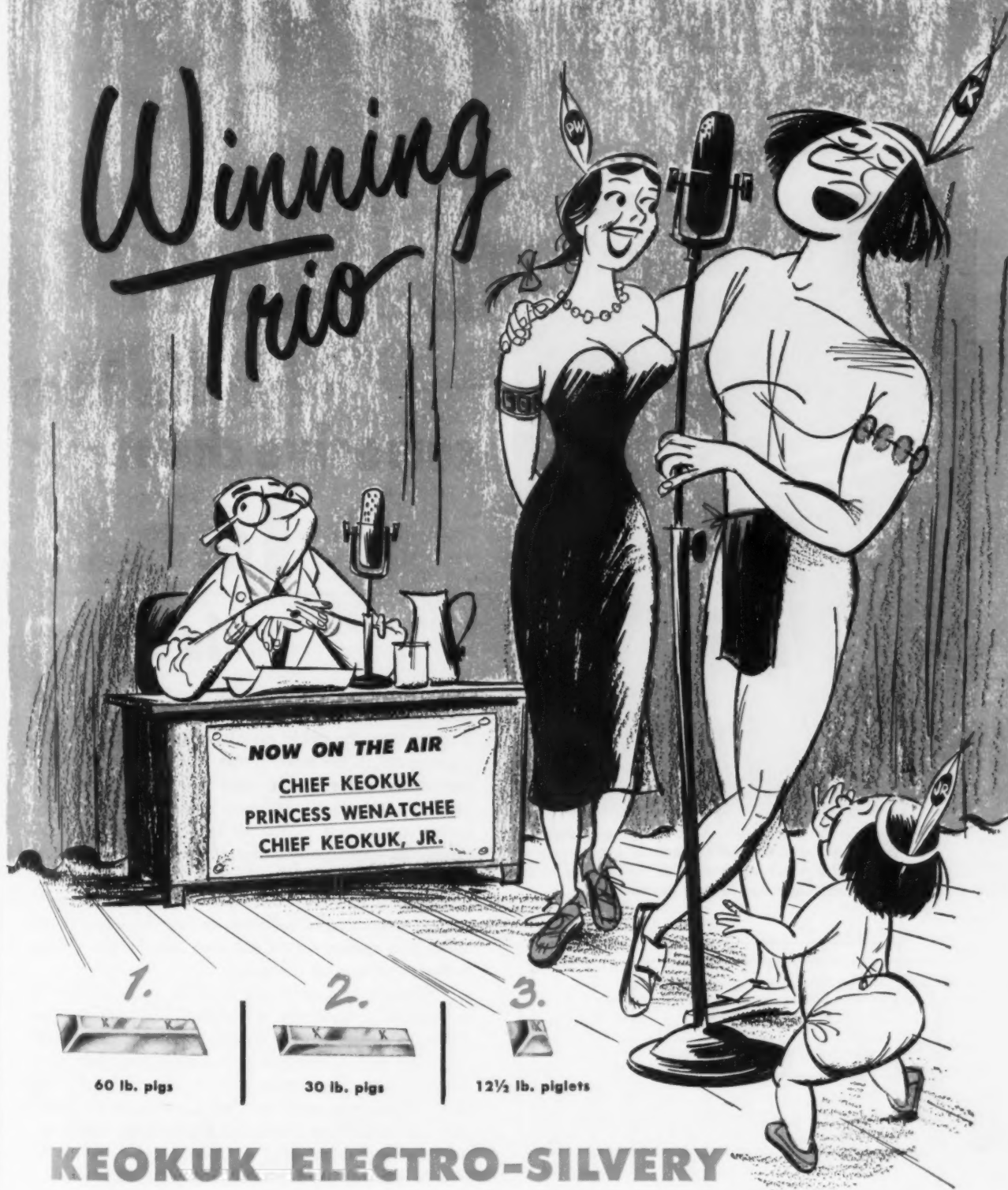
There are several inherent difficulties in what is apparently a simple reaction. Normally, when aluminum comes in contact with an iron sulfate solution such as pickle liquor, the precipitation of iron quickly comes to a standstill. Most of the original materials remain unchanged.

A reactor being developed by a Philadelphia concern overcomes this problem. The process is driven to completion, leaving only aluminum sulfate in solution and the iron freely suspended. A novel method is also being devised for separating the iron in a high quality condition, free from hydrates.

While particle size can be controlled to some extent by varying the conditions of reaction and collection, at present it is somewhat coarser and more abrasive than carbonyl iron powder—which means that it is considerably finer than hydrogen-reduced powder. The particles are crystalline in shape.

When scrap aluminum is not available, scrap magnesium can be used with equal effectiveness.

Winning Trio



KEOKUK ELECTRO-SILVERY

Yes, here's *your* unbeatable trio... Keokuk 60 lb. pigs for blocking the open hearth heat... 30 lb. pigs and 12½ lb. piglets for charging the cupola. "Pig for pig... car for car," the quality and uniformity of Keokuk Electro-Silvery *never* varies!

KEOKUK ELECTRO-METALS COMPANY

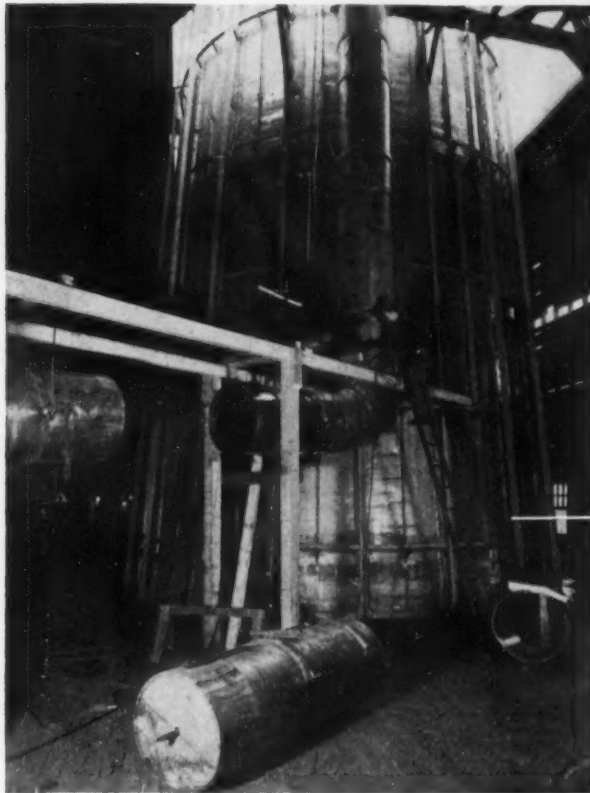
Keokuk, Iowa • Wenatchee Division: Wenatchee, Washington

SALES AGENTS

Miller and Company

- 332 S. Michigan Ave., Chicago 4, Ill.
- 3504 Carew Tower, Cincinnati 2, Ohio
- 407 N. Eighth St., St. Louis 1, Missouri

Mills-Packard towers used in the manufacture of sulfuric acid by the chamber process are constructed entirely of sheet lead supported in a steel frame. The lead is cooled externally by water flowing down the sloping sides.



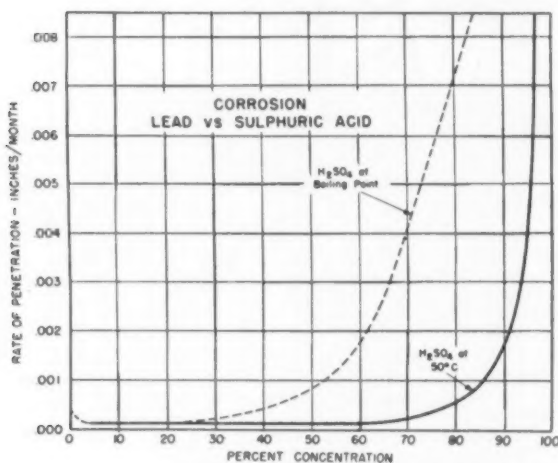
Electrostatic precipitator of the type used throughout the oil refining and chemical industries to prevent air pollution by sulfuric acid mist. Lead construction throughout, supported in steel framework.



for handling corrosive chemicals **lead** is basic

Lead, known in the middle ages as a *base* metal, to set it apart from the noble metals, is regarded in fact as a *basic* metal in the modern age. In the chemical process industries, indeed, lead has proved virtually indispensable. Of all the common metals, lead is the most corrosion-resistant in contact with industry's most-used chemicals—especially sulfuric acid, the principal chemical of the vast process industries. Lead has the unique property of forming automatically upon its surface a protective coating of insoluble and tightly adherent lead salts, thus setting up an effective barrier that prevents further corrosion of the metal.

While lead is unusually resistant to corrosion, it also is unusually receptive to manipulation, so to speak. Rolled in sheets, lead is readily formed to make linings for tanks and all manner of vessels for the handling of acids. Extruded in tubular form, or cast in molds or dies, lead makes pipe, coils and innumerable other items for use with corrosive solutions. Furthermore, lead, as a material of construction, is "manageable" in the field and on the job. Lead is inseparably joined by a simple "burning" or welding process without further heat treating or annealing. The adaptability of the metal is also a distinct advantage in meeting unexpected on-site conditions. Finally, of all the common materials used for chemical construction, lead is the most easily salvaged and a higher proportion of it is salvageable.



Courtesy: LEAD INDUSTRIES ASSOCIATION

ST. JOSEPH LEAD co.

250 PARK AVENUE, NEW YORK 17, NEW YORK • ELdorado 5-3200
THE LARGEST PRODUCER OF LEAD IN THE UNITED STATES

news of industry

Steel Industry Tops Nearly All Records But Earnings

Capacity, output, sales reach peaks . . . But Federal taxes, 100 pct higher for most major firms, take big bite out of profits . . . Quarter's steel output was 25.7 million tons.

New York—First quarter steel-making operations smashed almost every record on the books—except earnings. Capacity, production, sales, shipments, all registered all-time highs. But Federal taxes on income was the great equalizer. Earnings after taxes were about the same as those during the first quarter of the previous year.

Taxes Doubled—Most of the larger companies reported first quarter earnings about the same as for first quarter 1950. But these same companies estimated Federal taxes on income to be more than 100 pct higher than during the same period last year.

Steel production for the industry totaled about 25.7 million net tons of ingots and steel for castings. To achieve this record the industry had to maintain operations at an average very close to 100 pct of its rated capacity. Obviously, there were no serious or lasting disruptions of production, although a wildcat rail strike disrupted shipments during February.

During the first quarter a year ago the industry poured 22.2 million net tons of steel while operating at about 90 pct of rated capacity.

Defense Needs Climb—Defense and special government programs are taking increasingly large bites of steel output. Present bookings indicate that within 2 or 3 months some companies will have control

of less than half the steel they make. U. S. Steel's set-asides for these programs will reach about 50 pct in June. One company is booked 65 pct on priority programs. The industry average is getting close to 50 pct, though growing.

Irving S. Olds and Eugene G. Grace, chairmen of U. S. Steel and Bethlehem, both expressed satisfaction with separate new manganese deposits their companies have decided to develop in Brazil. Within 1½ to 3 years these deposits are expected to be contributing large quantities of good manganese. Meanwhile, loss of Russian manganese has been compensated for by increased shipments from other countries, including India and Africa.

E. T. Weir, National Steel chairman, said his firm would definitely build an eastern mill but the decision on when construction will start is at least a year away. He cited present high construction costs as an important factor.

"Shotgun Controls" — Admiral Ben Moreell, president and chairman of Jones & Laughlin, fired a broadside at "shotgun control methods" in Washington concerning steel distribution. He voiced a fear that complete control of steel will open the way to political pressure.

Chairman Frank Purnell, of Youngstown Sheet & Tube, told stockholders his company would

Turn Page

STEEL COMPANY EARNINGS

| Company | First Quarter 1951 | First Quarter 1950 |
|-------------------------|--------------------|--------------------|
| U. S. Steel | \$48,663,781 | \$49,217,742 |
| Bethlehem Steel | 25,066,205 | 25,572,930 |
| Republic Steel | 12,271,377 | 16,621,334 |
| Jones & Laughlin | 8,255,000 | 5,310,000 |
| National Steel | 13,255,401 | 13,434,454 |
| Armco Steel | 10,443,239 | 11,894,129 |
| Youngstown Sheet & Tube | 8,580,142 | 7,490,941 |
| Inland Steel | 9,318,270 | 9,320,463 |
| Wheeling Steel | 5,043,744 | 2,998,695 |
| Colorado Fuel & Iron | 2,805,380 | 1,613,078 |
| Sharon Steel | 2,801,291 | 1,276,830 |
| Crucible Steel | 2,554,568 | 759,451 |
| Granite City Steel | 1,431,385 | 1,201,879 |
| Barium Steel | 1,875,509 | 95,836 |
| Allegheny Ludlum | 3,303,691 | 2,270,681 |
| Copperweld Steel | 788,725 | 185,721 |
| Alan Wood Steel | 776,576 | 318,011 |
| Midvale Co. | 270,370 | 178,362 |
| Carpenter Steel Co. | 1,167,570 | 720,953 |
| Keystone Steel & Wire | 2,018,417 | 2,350,921 |

Italics indicate loss.

Ready Copper Duty Suspension

Washington — The Senate has approved a House-passed bill suspending the import duty on copper.

President Truman is expected to sign the measure as soon as Senate-House conferees iron out differences between the two bills.

Under the Senate bill, the suspension will be in effect from Apr. 1, 1951, to Feb. 15, 1953, or the end of the present emergency, whichever is earlier. Both houses approved reimposition of the tax if copper drops below 24¢ per lb.

Find High Content Cobalt on Farm

Birmingham—Samples of cobalt ore from a 500-acre farm near Childersburg, Ala., show "unusually high" content, said George Thigpin, president of the Southern Testing Laboratories, here. Extent of the deposit will not be known until further tests are made. Exploitation of the deposit will depend on the Bureau of Mines.

INDUSTRIAL SHORTS

Stock Transferred—The Nevada Scheelite Co., with mines and mill near Rawhide, Nev., is being transferred by sale of stock to KENAMETAL INC., producers of hard carbide metals with metallurgical works and tool making shops at Latrobe, Pa.

Scientific Research—PHILCO CORP. will join with the Massachusetts Institute of Technology in a program involving many fields of scientific research useful both to national defense and to the civilian economy.

Advisory Council—The NORTON CO. has announced the formation of the Norton distributors' advisory council made up of representatives of eleven Norton abrasive distributors from Connecticut to California. With the help of their distributors Norton expects to improve their selling job.

Changes Name—The Reading Chain & Block Corp., Reading, Pa., has changed its name to READING CRANE & HOIST CORP. The change does not affect the capital structure, personnel ownership or production of the company.

Sales Service—CHARLES H. BESLY & CO., manufacturers of taps, drills and reamers, have opened a new warehouse and sales office at 6516 Detroit Ave., Cleveland.

Officer Elected—H. W. Christensen, director of purchases, COLUMBIA STEEL CO., San Francisco, a U. S. Steel subsidiary, was elected a vice-president of the National Assn. of Purchasing Agents.

Certificate Presented—AMERICAN MACHINE & FOUNDRY CO., subsidiary DeWalt Inc., was presented an ECA Certificate of Cooperation at ceremonies in City Hall by New York City's Mayor Vincent Impellitteri, acting on behalf of the ECA.

Revere Celebration—Beginning of a national 150th anniversary celebration during 1951 of Paul Revere's founding in 1801 of the U. S. copper industry and of REVERE COPPER & BRASS, INC., was completed in New Bedford, Mass., with an Open House held in the copper fabricating plant at the New Bedford Div.

Larger Quarters—Owing to their congested quarters in Erie, the firm of SNAP-TITE, INC., is moving to larger quarters at 201 Titusville Rd., Union City, Pa.

Gets Contract—The EICHLEAY CORP., Pittsburgh, will lay foundations and relocate and install machinery and equipment at the new Warren, Ohio, plant of Brainard Steel Co. The project includes the moving of heavy equipment from the Farrell, Pa., and Orrville, Ohio, plants as well as from Warren.

Moving—Offices of the DUQUESNE IRON & STEEL CO., scrap iron and steel brokers, are now located in larger quarters in the Koppers Bldg., Corner Seventh & Grant Streets, Pittsburgh.

Three In One—A new office and show room in Chicago, located at 5835 W. North Ave., will be occupied jointly by the BRYANT CHUCKING GRINDER CO., FELLOWS GEAR SHAPER CO., and JONES & LAMSON MACHINE CO., all of Vermont.

Application Filed—SOUTH ATLANTIC PIPE-LINES, INC., has applied to the Federal Power Commission for authority to construct a 254-mile pipeline across Florida from Jacksonville to St. Petersburg.

At New Address—The New York district office of the CLEVELAND AUTOMATIC MACHINE CO. was moved recently to 75 South Orange Ave., South Orange, N. J.

spend \$100 million to add about a million tons of ingot capacity in the Chicago area. This will swing his company's capacity into 50-50 balance between Youngstown and Chicago, compared with former 65-35 balance in favor of Youngstown.

Inland president Clarence B. Randall told stockholders no amount of planning could bring prosperity to them and company employees if national planning is bad. He called for a reappraisal of national aims and clear statement of objectives.

Labor Replacement, Shortages Trip Up New England Civilian Work

Worcester, Mass.—Many New England firms are in the confused middle ground between defense and civilian phases of production. Businesses are being tripped up in maintaining civilian output while trying to convert to defense by shortages and problems of replacing drafted workers, said Ray M. Hudson, manager of the New England Council's Industrial Dept. He spoke at a public hearing sponsored by the Select Committee on Small Business of the House of Representatives.

A New England Council survey revealed that most smaller industrialists do not yet have a large volume of defense contracts but expect to get more subcontracts. They also hope CMP will bring them more materials needed for essential projects. Shutdowns are threatened in many cases because of restrictions placed on the use of aluminum, copper, steel, and nickel.

One manufacturer reported his business dropped 95 pct. Three reported business off by 50 pct and others listed drops of 10 to 40 pct.

Canada Nickel Use Rationed

Ottawa—Compulsory rationing of nickel went into effect May 1st. Defense projects in Canada, United States and Great Britain will get top priority, but sufficient quantities probably will be avail-

able for some less essential users.

Civilian manufacturers now receive about 65 pct of 1950 purchases under voluntary rationing. Control permits official scrutiny of manufacturers' stockpiles.

The order bans purchase of primary nickel or electrical resistance alloys containing nickel

without government permit. It also bans sale, supply and delivery of these nickel types without government approval.

The order applies to copper-nickel shot used for remelting, electrolytic cathodes, ingots, shot and electrical resistance alloys containing 50 pct or more of nickel or nickel and chromium.

northeast of Vancouver could yield the plentiful and low-cost power needed.

Inside the Mountain — The waters of a chain of lakes will be dropped through a 10-mile tunnel beneath the coastal mountains to a powerhouse *inside* the mountain, 2500 ft below lake level. Building plans of the British Columbia project extend for 3 years with provision for extension if the market isn't there.

Immediate plans call for excavation of the mountain tunnels and the generating station cavern to provide 800,000 hp. From 80,000 to 100,000 metric tons of new Alcan capacity will come from the British Columbia works. A \$45 million project to produce 200,000 firm hp has already been started on the Peribonka River. It will support about 45,000 metric tons of annual aluminum output.

Alcan, Alcoa Expansion to Add 500 Million Lb

Alcan will spend \$220 million for additional 330 million lb capacity in British Columbia and Northeast Quebec . . .

Alcoa to add another 170 million lb at Wenatchee, Wash.

New York — Aluminum fabricators who see suffering multiplied under accelerated defense and essential program use of aluminum may look yearningly at the aluminum output of the future. Both Aluminum Co. of Canada, Ltd., and Aluminum Co. of America opened up with big guns against future aluminum demand with two new programs that together will add 500 million annual lb to North American capacity.

Gain 330 Million Lb — Alcan will spend a total \$220 million to bring its capacity to over the 550,000 metric ton point. It will gain 330 million lb per year by spending \$160 million on an integrated first stage British Columbia plant and \$60 million for a 200,000 hp water power plant and ingot facilities at the Chute Savanne on the Peribonka River, Saguenay district of northeastern Quebec. Building the Chute Savanne powerhouse will boost Saguenay area output in 1 year and thus serve close-at-hand demand.

Alcoa will build an aluminum smelting plant with a capacity of 170 million lb per year at Wenatchee, Wash. Selection of the site resulted from the favorable conclusion of negotiations with the Bonneville Power Administration and the Public Utility District of Chelan County. Steady amounts of water power at competitive prices were assured Alcoa.

Alcan's decision to expand ended

speculation on results of engineering surveys to determine feasibility of building in British Columbia's Tweedsmuir Park area. The firm decided that a major engineering project 400 miles

U.S., Canadian Ore Consumption

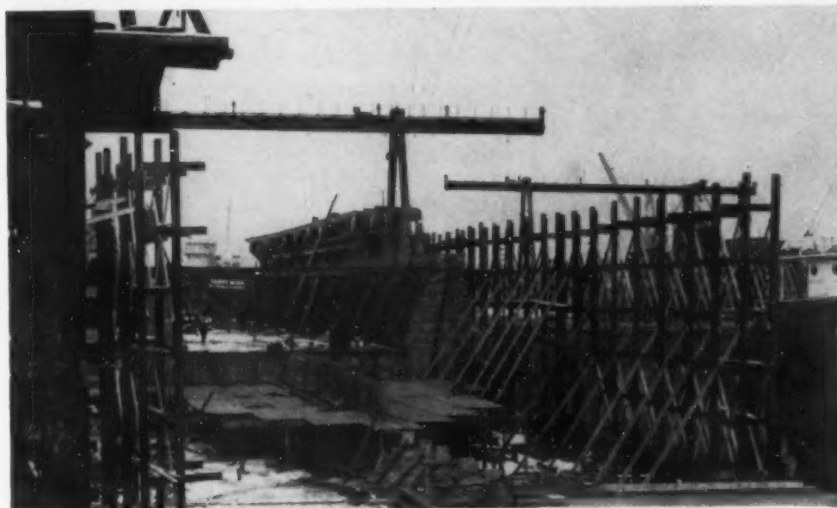
Cleveland — March consumption of Lake Superior iron ore by U. S. and Canadian furnaces was 7,371,888 gross tons, according to the Lake Superior Iron Ore Assn. Furnaces in the two countries used 21,309,540 tons to Apr. 1 this year.

Ore on hand at U. S. and Canadian furnaces on Apr. 1st totaled 14,910,805 tons.

Buys Diesels for Fairless Works

Pittsburgh — U. S. Steel Co. is buying 16 diesel-electric locomotives for use at its Fairless Works near Morrisville, Pa. Baldwin-Lima-Hamilton Corp., Eddystone, Pa., and Fairbanks, Morse & Co., Chicago, will each furnish eight of the engines. They will be 120-ton switchers with 1200 hp. The first locomotive will be delivered in July.

HULL: One of three ore boats, with a capacity of 19,600 gross tons each, takes form. Hull 867 at Lorain, Ohio, shipyards of American Shipbuilding Co., will see service as part of the Pittsburgh Steamship Co.'s lake ore fleet. Ship will be 647-ft. long.



PA's Struggle to Maintain Inventory Balance

Freight car program stumbles for want of few steel items . . . Civilian production slowed . . . NPA readies staff to enforce inventory control order . . . No court actions yet.

New York—Inventory control in the next 6 months poses a thorny problem for purchasing agents and material control experts.

The threefold task of complying with NPA's inventory requirements, meeting growing defense schedules, and maintaining civilian production will add gray hairs to many heads.

NPA means to enforce Reg. 1 inventory controls. A small staff has so far limited policing to spot checking and handling complaints. But the staff is growing and spreading out into the field. Some Federal Trade Commission personnel have been loaned to NPA.

Staff size prevents NPA from checking all firms to see if reports have been filed. But procedure for handling complaints is established and some are being processed.

Honest Errors—Through Apr.

11 NPA reviewed 648 cases of noncompliance with its orders and regulations. Of 526 cases closed, 122 were for inventory violations. Most were honest errors.

So far no case has justified court action. A case of wilful violation would be turned over to the NPA's general counsel. If court action were warranted the case would go to the Justice Dept. DPA penalties carry a \$10,000 fine, a year in the pokey, or both.

Administrator Manly Fleischmann says his agency's compliance policy is aimed at preventing violations. But NPA can get tough.

Right now unbalanced inventories are a dragging anchor on both defense and civilian production. The big freight car program has been struggling for months for lack of some kinds and shapes of steel.

March production of freight cars and tank cars totaled 7011 units. The difference between this and the 10,000 unit March goal was partly due to inability of producers to get steel for axles, brake beams, rods and wheels.

Output Slows—In the race to beat CMP, civilian production is visibly slowing from lack of nourishment. The shortage of alloy and carbon bars apparent for some months to automakers is being reported by many other industries.

Trading, a means of restoring inventory balance, is faltering. Sheets are usually offered in a swap for bars. But manufacturers with sheets are finding fewer and fewer takers with bar stock. Those who don't use sheets have nothing to trade. Most trading now is being done by big sheet users in the Detroit area.

Auto production today is holding on partly with foreign alloy steel billets and bars. The price is about three times the normal cost. Conversion facilities are eagerly sought after, especially mills which reroll rails. They provide a sizable source of conversion bars for the auto industry.

Stockpiling may be one reason for the acute alloy bar shortage. But defense programs for rockets and shells, which can be tooled quickly, are beginning to get underway. Many bazooka rocket and shell parts are machined from bar and these items may now be piling up tonnage.

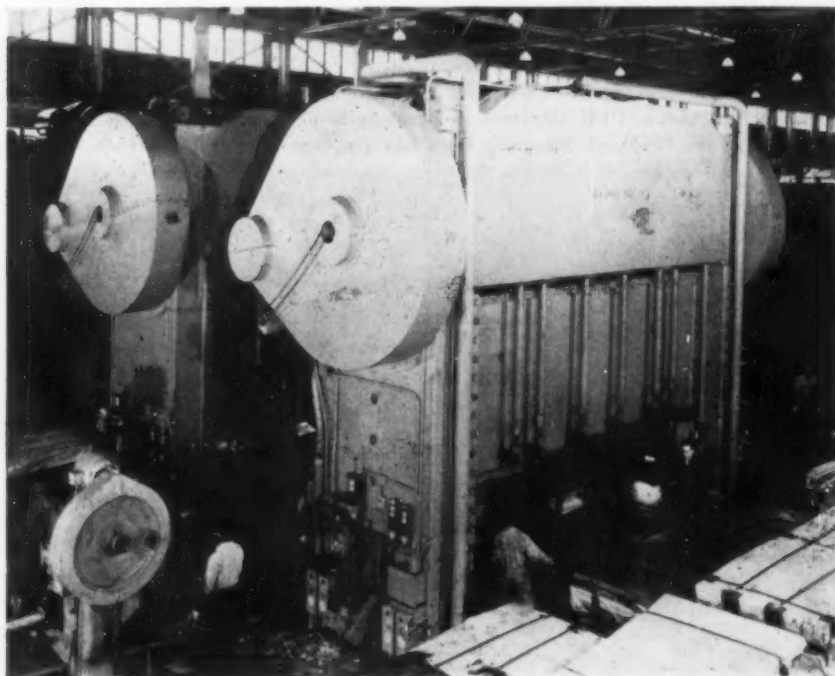
Coke Export Quota Unchanged

Washington—The Office of International Trade has set the second quarter export quota for metallurgical and foundry coke at 15,000 short tons—the same as for the first quarter.

Alloy Plant Construction Starts

New York — Construction of Vanadium Corp. of America's \$7 million alloy production plant in Mason County, West Virginia, has been started, reported W. C. Keeley, president. He also said

GIANTS: Two of five big 2000-ton rail presses at the Ford Motor Co.'s Rouge plant. Built by E. W. Bliss Co., the presses are 29 ft high and measure 220 in. between uprights. They will be used to make auto frame side members.



March output of chrome ore from the firm's mines in Southern Rhodesia were triple those of March last year.

Net earnings before Federal income taxes increased 75 pct in the first quarter of 1951. Net income was up 15 pct.

Army Seeks to Lease Ordnance Plant for Production of Ammonia

Washington—The Army Dept. is about to renew efforts to lease the standby Morgantown Ordnance Works, Morgantown, W. Va., for production of ammonia and related products. Except for its coke ovens, the plant is in standby status, last operations ceasing last year.

A 5-year lease on the ovens held by the Sharon Steel Corp. will expire on June 30. New proposals will be opened June 18 with the award to be decided June 25.

Sharon Steel will enter a bid for renewal of its lease on the coke oven plant. The coke plant, with 74 ovens, has an annual capacity of 400,000 tons.

Proposals will be asked on three alternative bases: lease of the whole plant, lease of the plant exclusive of the coke ovens, and lease of the coke ovens alone.

To Expand Lackawanna Steel Mill

Buffalo—A \$100 million expansion program will make Bethlehem Steel Co.'s Lackawanna plant the third largest in the country, pushing up annual steelmaking capacity to 5 million tons, said Eugene G. Grace, chairman of the board, this week. With other Bethlehem officials he visited the works here last Monday.

Vice-president Stewart J. Cort reported that the Siegfried Construction Co. had been awarded a contract for a new blast furnace to be completed in April, 1952. Work will start this June on four new openhearth. Work is now underway to deepen the Lackawanna ship canal to a depth of 27 ft to accommodate the largest Lake ore ships.



RING IN THE NEW: This is the new board of directors of the MPA elected at last week's meeting and show in Cleveland. From left to right, front row, F. H. Mulligan of Charles Hardy, Inc.; Chairman W. P. Schenck, of Alan Wood Steel Co.; President T. L. Robinson, Wel-Met Co.; Vice-President E. H. Klein, New Jersey Zinc Sales Co. Back row, R. P. Seelig, American Electro Metal Corp.; MPA acting secretary and treasurer R. L. Ziegfeld; W. E. Cairnes, Radio Cores, Inc.

Powder Men Want Lowdown on Bands, Bullets

Fabricators, powder producers want to know "when" and "how many" bands and bullets at Metal Powder Assn. meeting
... W. P. Schenck elected chairman of board—By Jack Kolb.

Cleveland—Iron powder rotating bands and bullets got the most attention at last week's annual meeting and show of the Metal Powder Assn. held here. Fabricators and powder producers wanted to know "when" and "how many" bands and bullets would be needed (see p. 95 and THE IRON AGE, Feb. 15, 1951, p. 109).

Speakers A. J. Langhammer, chairman, American Ordnance Assn. powder metallurgy committee; Col. G. A. Miller, Jr., Frankford Arsenal, and A. M. Burghardt, Watertown Arsenal, reviewed progress to date but could give no definite answers. Sizable test orders are in production.

Depending on results of these tests an early decision may be made to expand the iron powder industry's capacity to several times its present size.

Officers Elected—W. P. Schenck, of Alan Wood Steel Co., was elected chairman of the board of directors, with T. L. Robinson, Wel-Met Co., made association president and E. H. Klein, of New

Jersey Zinc Sales Co., chosen vice-president.

Other papers read at the technical sessions included a report on the effects of copper infiltration on low density areas and strength of iron powder parts by George Stern, American Electro Metal Corp. Experiences of a British drawn wire producer in fabricating powdered metal parts as a complementary item to their own line of shaped wire were described by John Rigby, of John Rigby & Sons, Ltd.

Armed Forces Standards—A report on the coordination of standards and specifications of all the armed services by the Dept. of Defense was given by Col. A. E. Mickelsen, Chief, Munitions Board Standards Agency. Metallographic studies of sintered brass powders and examples of metal powder applications in home appliances (THE IRON AGE, Apr. 20, 1950, p. 95) were discussed by C. J. Bier, Powder Metal Div., Radio Cores, Inc., and J. D. Carey, General Electric Co., respectively.

BITS AND BRIEFS

—By Bill Packard—

President Truman's request for authority to build war plants comes as no surprise. If it were only war plants we wouldn't get so excited — even though we haven't noted industry lagging. But we remember previous threats of government invasion of steel and other industries . . . General Electric's big new appliance park pretty definitely slated for Louisville. Company taking options on two 800-acre sites practically cinches it. Steel supplies may move by water from Pittsburgh area . . . Legal freight absorption may have lost its compelling urgency. But there's a lot of sentiment for writing it into law while FTC statements and Supreme Court interpretation are hot. It has a good chance if it isn't sidetracked before coming to vote . . . Eastern Clay Products opening new plant in Jackson, Ohio, to make patching refractories . . . Shocking to Americans is the evidence that some influential Britons place free false teeth above the security of their country . . . **Observation:** some companies planning defense expansion so that new plants fit in with future peacetime market aspirations. It makes good sense . . . Tip to expanding companies: Practically all structural steel will be controlled under the new CMP. Even approved "essential" expansion can't all be built simultaneously. Don't jump off the deep end without a green light from your approving government department or agency . . . **Reynolds Metals taking over management of Air Force's Adrian, Mich., pilot plant for metal forging and extrusion . . . Air Force ordering \$3 million of precision instruments from Electric X-Ray Corp. Company plans additional output from expansion, leaving civilian output unaffected . . . Chairman E. G. Grace confirming Bethlehem is not interested in New England steel plant project. But he left**

reporters wondering if Bethlehem were planning a big move in another direction . . . The Kaisers weren't kidding when they turned from government to private financing. K-F seeking \$24 million in bank loans to finance production of military planes and engines

. . . Vanadium-Alloys Steel Co. shareholders approved plan of reorganization and 2 for 1 stock split . . . Problem: A purchasing agent for a power company is looking for enough steel to build .4 of a tower. He's been allotted enough steel to make 1.6 towers.

Conversion Steel Market Losing Sources

Surplus cold-rolling capacity available . . . Ingots scarcer . . . Defense demands cause cold mill cutback and hit electric furnaces heavier . . . Scrap shortage is factor—By Bill Lloyd.

Cleveland—Conversion steel is becoming a leaner version of its former self as the supply of ingots for conversion purposes sheds tonnage.

Mill space, one of the big bottle-necks in conversion deals, is now readily available and many major producers have surplus cold-rolling capacity. But nobody has enough ingots.

Defense Repercussions—The reversal of position of rolling and melting capacity availability is the direct result of the defense program, which goes heavy on plates, heavy sheets, and alloy steels. This has caused a cold mill cutback and a big increase in electric furnace operations.

Development of the defense program and the big alloy steel requirements emerging from it deflated the conversion market. Defense needs have dug into electric

furnace capacity which bolstered the business.

Dew Off the Daisy—Some steel foundries and a few forge shops are still making some ingots, and some of the "regular" converters are still selling a few customers, but the dew is definitely off the daisy.

Second big factor in the downturn of the conversion market is the shortage of scrap. With many producers dependent upon allocations and earmarked material, the future source of conversion melt appears to be endangered. A few ingots are being made in the open-hearth, but this is a small part of the market.

Some converters have felt the scrap pinch worse than most. They are beginning to figure that the fewer ingots they sell, the more scrap they can get on the same volume of melt by putting their ingots into any kind of finished or semi-finished product.

But despite the reduction in volume, certain conversion practices are unchanged. A man with ingots but in need of sheets offers them to a mill, which buys them at its own average ingot production cost. The mill then rolls the sheets and sells them back at the market price. The mill keeps the scrap, which in the case of ingot to cold-rolled is about 30 pct.

Pricing of Ingots—Cost of the ingots is less clearly defined. Some converters use a straight scrap price formula and at least one



"Watch the expression on the guard's face —I'm working in two departments this week!"

employs escalation as well. Another works like this—ingots are \$75 when scrap is \$38. With scrap \$52, he charges \$89 for the ingots. Another is charging \$110, plus the cost of the scrap over \$40.

One operator, badly in need of sheets and in a hurry, had his ingots slabbed at one mill, rolled into bands at another, and cold-finished at a third. Net cost per ton was about \$270.

Some users of conversion steel have bought foreign ingots, chief source of which seems to be France, Germany and Belgium. Size is a problem with the foreign

material, however. One operator turned up recently with a big tonnage of 9 x 9 ingots.

Price ceilings on products has created a little resistance to high conversion costs but both the automotive and home appliance industry will still, within certain limitations, take all the ingots they can get.

Finally, demand for conversion has taken a different form. Bars are momentarily tighter than sheets. One converter last week turned down an order for 25,000 tons of plates for a pipeline.

drop imports from the comfortable 1949 level. Even with its steel-making gain, Canada had 200,000 tons less steel last year.

Depressing Factors—The most potent depressors of Canadian steel expansion are the vast and varied productivity and great steelmaking capacity of the U. S. Before World War II, the U. S. was eager to jump Canada's low tariff wall to reach an accessible market with its exports.

Faced with this stream of steel and goods, Canadian mills also did not have the concentrated population and industry of the U. S. They had to turn to general purpose mills to make a variety of steel products for a small, dispersed market. Expansion had to keep an eye to U. S. competition.

Filling out raw material sources down the line for a boost of capacity is forbiddingly expensive for a small industry and any capacity increase, however modest by U. S. standards would be substantial for Canada. Steel had to wait for positive, appreciable growth of its markets because tiny increases in steelmaking capacity are not feasible.

In recent years fabricating has been stepping ahead of steelmaking. A fabricator's investment is comparatively light. American capital has helped this trend. Because of the wax and wane character of Canada's steel imports, these firms find they don't have enough steel.

Heavier Industrialization—Now Canadian steelmaking capacity is beginning to catch up to demand. Imports will remain a prime factor in meeting demand because industrialization is quickening. Industrial areas are becoming concentrated as is population. New iron ore and oil resources are opening up in Canada's back yard. These will build up the wealth of the nation and demand steel.

To realize the full productive potential of this continent by keeping Canadian firms busy for the common defense, the U. S. will allocate steel to essential needs.

Canadian Steel Expands Despite Handicaps

Ingot capacity more than doubled since 1939 . . . New program to bring steel capacity to 4.5 million tons . . . Declining imports aid shortage . . . Canadian market for steel growing.

Toronto — Canadian fabricators of steel products unable to fulfill civilian orders because of the lack of steel will humanly suspect the Canadian steel industry of having a foggy crystal ball for divining steel needs. But the truth is that steel has had to cope with many handicaps to growth and has maintained a finely-balanced normal supply for its limited and scattered market.

Now Canadian fabricators have been cautioned to abandon production plans involving use of more steel and the government is tightening the vise to squeeze civilian output.

More Expansion—Despite drawbacks, steel men have judiciously more than doubled ingot production since 1939. They are pushing ahead another growth program which may seem small compared with U. S. expansion but is large for Canada. The industry is investing \$100 million to bring steelmaking capacity to 4,500,000 annual tons and blast furnace capacity to 3,500,000 tons. Last year the industry tacked on another 200,000 tons of output to reach 3,270,000 tons—but still

fabricators were worse off than in 1949.

Reason for this was declining imports from the U. S. and other traditional suppliers. Canada's 1950 imports were 400,000 tons less than in 1949 when U. S. mills were beginning to grab for export markets. A dependent on the U. S. for a little less than a fourth its steel and a greater part of its sheet needs, Canada saw a resurgence of U. S. home demand

Looking for Subcontractors?

THE IRON AGE offers a special service to prime contractors who want acceptable bidders on subcontract work. This service is offered free in an effort to bring prime contractors and subcontractors together. Send a picture or simple inked sketch of the part to be subcontracted, with the part number, approximate size, tolerances, material, machine work needed and quantity required to:

"Can You Make It?" Editor
The Iron Age
100 East 42nd Street
New York 17, N. Y.

CONTROLS DIGEST

OPS Sets Machinery Prices at June 24 Levels

Machine tool makers hit also . . . Payroll, material rises may be added to base period price but not higher overhead costs . . . CPR 22 exempts metal, mineral producers, fabricators.

Washington—New price ceilings on all industrial machinery, including machine tools, will go into effect May 28. (THE IRON AGE, May 3, 1951, p. 29.)

Under the new ceiling price regulation, machinery manufacturers are required to roll back their selling prices to June 24, 1950, levels or those prevailing in any of the three calendar quarters preceding that date.

Excludes Higher Overhead—Nearly all payroll and materials costs increases are allowable additions to the base period price, but higher overhead costs may not be included under the new Office of Price Stabilization ruling.

"Overhead costs" are defined by OPS as including expenses of general administration, sales, advertising, research, plant expan-

sion and improvement, and overtime pay.

Issuance of the new machinery price orders spells out the removal of virtually every type of industrial machinery, starting May 28, from the government's general price-freeze order of Jan. 26. That order froze selling prices at Dec. 19-Jan. 25 levels.

Drastic Rollbacks—In another OPS action (CPR 22), an estimated 75,000 manufacturers, but not including metals or minerals producers or fabricators, were ordered to roll back selling prices to pre-Korea levels, i. e., June 24, or any one of the three preceding calendar quarters, plus labor and materials cost increases.

CPR 22 blankets a vast area of industrial products, including radios, television sets, refrigerators, washing machines, ranges,

furniture, many building materials, hardware, tires and other rubber products, most chemicals, paper and paper products, and many textile goods.

Manufacturers grossing under \$250,000 a year have the option of remaining under the general freeze or pricing under CPR 22.

Debate Controls on Sulfur

Washington—Restriction of civilian supplies of sulfur was pending this week as NPA studied whether to apply tighter controls through limitation of end uses or by allocation. (THE IRON AGE, Apr. 26, 1951, p. 113.)

Industry representatives meeting with NPA lean toward allocation rather than limitation of end uses.

About 75 pct of sulfur production goes into making of sulfuric acid, demand for which is rapidly increasing in industry as the defense program mushrooms. Production officials say that there is little possibility that sulfur production will expand as rapidly as the demand.

Draft New Tungsten Order

Washington—A virtually new tungsten order is being drawn in the revision of M-30 so as to place wider and tighter controls on the scarce metal.

Under the pending amendment, more forms of refined tungsten such as carbon and hydrogen-reduced (bar and rod) will also be placed under complete allocation. It also will require applications for allotments to be filed 45 days in advance of the month of expected delivery.

Industry Controls This Week: NPA Orders

Reg. 5, Appeals—Sets up a three-man board to handle appeals for adjustment under NPA orders and regulations. Effective Apr. 25.

M-19, New Cadmium uses—Adds fastener hardware, fuel pump parts and aircraft battery hold-down bars to permitted use list. End use certifi-

Defense Contracts to Metalworking Industry

Selected Contracts, Week of Apr. 30, 1951

| Item | Company |
|---------------------------|---|
| Bomb rack hooks | Machines, Inc., Philadelphia |
| Milling machines | Brown & Sharpe Mfg. Co., Philadelphia |
| Turbochargers | General Electric Co., Schenectady |
| Airplanes | Boeing Airplane Co., Seattle |
| Indicators | Bendix Aviation Corp., Teterboro, N. J. |
| Inverters | Jack & Heintz Precision Industries, Inc., Cleveland |
| Spare parts | B. G. Corp., New York |
| Machinery equipment | Aircraft Tapered Sheet, Inc., Los Angeles |
| Surface grinders | Mattison Machine Works, Chicago |
| Machine tools | Norton Co., Worcester, Mass. |
| Radial drill | Cincinnati Bickford Tool Co., Cincinnati |
| Drilling, milling machine | Giddings & Lewis Machine Tool Co., Fond Du Lac, Wis. |
| Broaching machine | The LaPonte Machine Tool Co., Hudson, Mass. |
| Lathe | The Monarch Machine Tool Co., Sidney, Ohio |
| Engine and body parts | Federal Motor Truck Co., Detroit |
| Diesel engine | GMC, Detroit |
| Range finder | Northrop Aircraft, Inc., Hawthorne, Calif. |
| Lathes | Jones & Lamson, Springfield, Vt. |
| Milling machine | Brown & Sharpe Co., Providence |
| Machine tools | The Tabor Mfg. Co., Philadelphia |
| Pallet trucks | Service Caster & Truck Co., Washington |
| Grinders | The Heald Machine Co., Worcester |
| Buildings, metal prefab. | Great Lakes Steel Div., Ecorse, Mich. |
| Engine parts | Bendix Aviation Corp., Eclipse-Pioneer Div., Teterboro, N. J. |
| Geared induction motors | Servo-Tek Products Co., Inc., Paterson, N. J. |
| Tractors | J. I. Case Co., Racine, Wis. |
| Gages | Greenfield Tap & Die Corp., Greenfield |
| Cannon parts | Fallkill Machine Co., Inc., Poughkeepsie, N. Y. |
| Motors | Diehl Mfg. Co., Somerville, N. J. |

ENGINEERS AND DESIGNERS

This is for
YOU



"3 KEYS TO SATISFACTION"

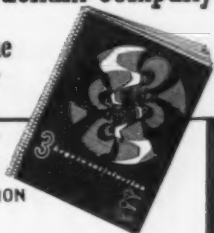
72 pages of valuable information on scientific design and metallurgical data—write for it now . . .

Success in designing steel components—avoidance of localized stresses—good design and bad design from the metallurgical viewpoint—steel selection and treatment as they affect the design engineer. This invaluable book gives the answers!

Climax Molybdenum Company

500 Fifth Avenue
New York City

Please send your
FREE BOOKLET
3 KEYS TO SATISFACTION



Name _____
Position _____
Company _____
Address _____

1A-5

F25

cation of finished sub-assemblies no longer necessary. Effective Apr. 26.

M-25, Blackplate—Milk cans smaller than 5 gal given preferential status. Tinplate may be used for one end of can. Effective Apr. 24.

M-47, Iron and steel use—Exempts some consumer goods from the 80 pct restriction. Effective Apr. 24.

M-49, Columbium, tantalum—Requires inventory reports of any person who had or used 10 or more lbs of contained metal during any one month. Permissible working inventories increased from 30 to 45 days. Effective Apr. 26.

OPS Orders

CPR-22, Price rollback—Rolls back many prices to pre-Korea levels plus labor and material cost increases.

New NPA Order Appeal Board

Washington—A three-man appeal board, headed by T. Munford Boyd, former attorney with WPB, has been named to supplant the varied special boards which have been handling appeals for adjustments under NPA orders and regulations.

Other members of the board, both former WPB officials, are Jack M. Rorimer, formerly with the Empire Plow Co. and OPS, and Frank J. Peterson, active in

Kansas City labor affairs before coming to Washington with the government.

To Open Question Center

Washington—An Inquiry Center to give business men information on DPA, OPS, and defense production questions will be opened about May 1. It will be located at the former General Accounting Office building, Fifth and G Sts., N. W., Washington.

Hazleton Steel Gets U.S. Loan

New York—A government loan of \$7,800,000 under the Defense Production Act has been granted to the Hazleton Steel & Tubing Corp., Hazleton, Pa., by the Defense Production Administration, reports Benjamin S. Dowd, the firm's president.

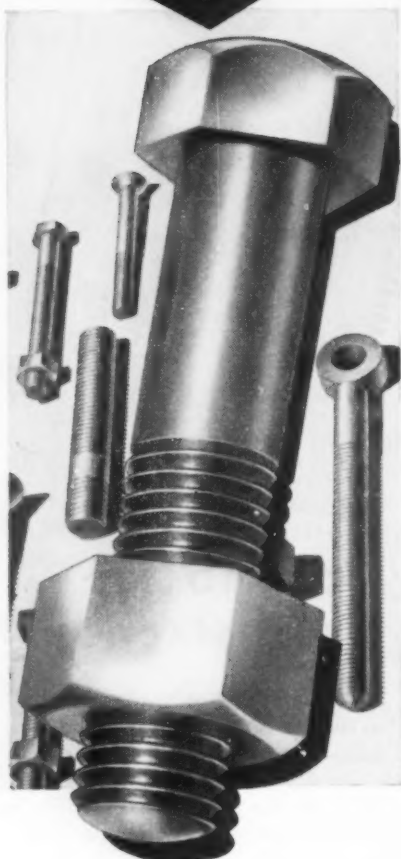
With a certificate of necessity already issued, Hazleton Steel started construction of the new plant over 3 weeks ago. To be located near Hazleton, Pa., the plant will make seamless steel tubing and casing from steel made in its electric furnaces. Plant opening is scheduled for early in 1952.

Get the Little Woman on Industry's Side

New York—How does the little woman feel about her workingman husband's job and can she prove an ally for industry in molding opinion and behavior of her husband? This is the subject of a booklet recently published by the Group Attitudes Development Corp, this city. It diagnosed the psychology of the wife and found that in general she:

- (1) Sees her husband's job as a source of income for the family.
- (2) Doesn't care overly much for pension plans, job prestige, advancement potential, working conditions, etc.
- (3) Admits her husband wants good working conditions and advancement.
- (4) Will oppose reduction of income and hates strikes.
- (5) Favors hospitalization and other safeguards against suspended income.
- (6) Encourages overtime if young, opposes it if older.
- (7) Doesn't encourage job changes.
- (8) Wants information on the company, reads hubby's business mail, and gets more information from union than company.
- (9) Can be influenced by company literature. The more she knows about her husband's job the more she leans to management.
- (10) If she worked in a factory she is stubborn to management thinking.
- (11) Is essentially conservative in economic thinking and influences her husband in that direction.

First for
**BOLTS
NUTS
STUDS**



- ★ Carbon Steel ★ Stainless Steel
- ★ Heat-treated ★ Silicon Bronze
- ★ Alloy Steels ★ Naval Brass
- ★ Monel Metal

You can count on a uniform Class 3 Fit when you buy Pawtucket threaded fasteners. Accurately made in standard dimensions—or to your specifications.

BETTER BOLTS SINCE 1882

Use Headed and Threaded Fasteners for Economy and Reliability

PAWTUCKET

"THE BOLT MAN"

MANUFACTURING COMPANY

327 Pine Street - Pawtucket, R. I.

THE PLACE TO SOLVE YOUR BOLT PROBLEMS

T.M. REG.

• News of Industry •

Steel Div. Stands at Head Of List Under New NPA Metals Set-up

Washington—Under NPA's revised list of iron and steel departments, the steel department was raised from branch to divisional status, standing directly under the Metals and Minerals Bureau. Another section, Rails and Accessories, will probably be set up. The reorganized set-up follows:

NATIONAL PRODUCTION AUTHORITY
Manly Fleischmann, Administrator

Metals & Minerals Bureau
Asst. NPA Administrator Norman W. Foy, Director

Iron and Steel Div.
Melvin W. Cole, Director
R. F. Sentner, Deputy Director
Frank T. McCue, Asst. to Director

PRODUCT SECTIONS

Wire Section
Norman Melville, chief

Tinplate Section
E. J. Sanne, chief

Pipe & Tube Section
Jay Owings, chief

Priorities & Statistical Control Section
Kenneth H. Hunter, chief

Sheet & Strip Section
M. B. McCafferty, chief

Bar & Semi-Finished Section
Henry P. Rankin, chief
George L. Anderson, Asst. Chief

Forgings Section
H. F. Weaver, chief

Warehouse Section
Russell Link, chief

Castings Section
A. J. McDonald, chief

Ferroalloys Section
James H. Critchett, chief
Edwin K. Jenckes (cobalt)
Peter Reinertson (tungsten)
Harold Larson (nickel)

Scrap Section
Marvin S. Plant, chief

Stainless Steel Section
John Ewing, chief

Refractories Section
Marguerite M. Sauers, chief

Pig Iron Section
John A. Claussen, chief

Alloy & Cold Drawn Bar Section
John J. Boylan, chief

Structural Shapes Section
Tom M. Dalby

Plate Section
Max Hoffman, chief

Auxiliary Products Branch
Lindsey Howell, acting chief

Program Section
Charles Halcomb, chief

Plant Expansion Section
H. L. Leyda, chief

Tool Steel Section
Felix Kremp, chief

MRO Section
F. A. Weidman, chief

Higher Scrap Prices for Peddler?

Camden, N. J.—Better prices for the scrap collectors and peddlers in remote areas can result in a greater flow of scrap iron and steel to meet the shortage that now threatens shutdowns of open-hearths, said Dominic J. Giordano, general manager of the Giordano Waste Material Co., this city.

Peddlers' prices should consider long and costly hauls and the increased cost of operations, continued Mr. Giordano. A more attractive profit margin for the unorganized peddler can give him added incentive to go out and bring in the scrap, he said.

March Iron & Steel Production by Districts

As Reported to American Iron & Steel Institute

| DISTRICTS | BLAST FURNACE NET TONS | Number of Companies | PIG IRON | | SPIEGEL, FERRO- MANGANESE | | TOTAL | | | | |
|----------------------|---------------------------|------------------------|--------------------|-------------|------------------------------|---------|-----------------|-------------|-----------------|-----------------|---------|
| | | | Annual Capacity | Mar. | Year to Date | Mar. | Year to Date | Mar. | Year to Date | Pct of Capacity | |
| | | | | | | | | | | Mar. | To Date |
| Eastern | 12 | 13,870,680 | 1,162,933 | 3,393,098 | 29,561 | 81,994 | 1,192,494 | 3,475,092 | 101.2 | 101.6 | |
| Pitts.-Yngstn. | 17 | 27,070,520 | 2,209,767 | *6,376,442 | 29,041 | 74,472 | 2,238,808 | *6,450,914 | 97.3 | 96.6 | |
| Cleve.-Detroit | 6 | 7,110,600 | 581,008 | 1,584,395 | | | 581,008 | 1,584,395 | 96.2 | | |
| Chicago | 7 | 15,684,040 | 1,281,957 | 3,533,269 | 4,970 | 5,694 | 1,286,927 | 3,538,983 | 98.6 | 91.5 | |
| Southern | 9 | 5,310,740 | 442,638 | 1,285,227 | 5,778 | 31,230 | 448,416 | 1,316,457 | 99.4 | 100.5 | |
| Western | 4 | 3,425,200 | 268,009 | 711,944 | | | 268,009 | 711,944 | 92.1 | 84.3 | |
| Total | 38 | 72,471,780 | 5,946,312 | *16,884,395 | 69,350 | 193,390 | 6,015,662 | *17,077,785 | 97.7 | 95.5 | |

| STEEL —NET TONS | Number of Companies | TOTAL STEEL (Incl. Alloy Steel, Carbon Ingots) | | | | | ALLOY STEEL | | CARBON INGOTS | | |
|--------------------|------------------------|---|-----------|-----------------|-----------------|---------|-------------|-----------------|---------------|-----------------|--|
| | | Annual Capacity | Mar. | Year to Date | Pct of Capacity | | Mar. | Year to Date | Mar. | Year to Date | |
| | | | | | Mar. | To Date | | | | | |
| DISTRICTS | | | | | | | | | | | |
| Eastern | 25 | 20,823,230 | 1,825,692 | 5,149,970 | 103.2 | 100.3 | 144,795 | 397,030 | 356,655 | 967,347 | |
| Pitts.-Yngstn. | 34 | 41,411,870 | 3,497,436 | 10,030,853 | 99.4 | 98.2 | 498,715 | 1,397,451 | 400,064 | 1,143,262 | |
| Cleve.-Detroit | 8 | 9,601,940 | 847,715 | 2,327,797 | 103.9 | 98.3 | 59,424 | 166,436 | 103,789 | 291,779 | |
| Chicago | 15 | *21,522,750 | 1,959,809 | *5,456,551 | 107.2 | 102.8 | 149,664 | 425,854 | 279,190 | 795,676 | |
| Southern | 9 | *4,913,340 | 422,810 | *1,252,693 | 101.3 | 103.4 | 6,227 | 15,354 | 4,138 | 11,273 | |
| Western | 11 | 5,956,520 | 517,593 | *1,461,859 | 102.3 | 99.5 | 11,922 | 31,575 | 39,029 | 98,670 | |
| Total | 81 | 104,229,650 | 9,071,055 | 25,679,923 | 102.4 | 99.9 | 870,747 | 2,433,700 | 1,183,065 | 3,308,000 | |

* Revised.

New GM V-8 Engine Averages 29 Miles Per Gallon in Tests

Quartet of Cadillacs make the run
... This year's car gets 19.8 miles.

Tulsa, Okla.—Using a new, improved Hydra-matic transmission and a new V-8 engine with 12 and 1 compression ratio, General Motors technicians have averaged better than 29 miles per gal at 30 mph and 20 miles per gal at 70 mph, Charles L. McCuen, GM vice-president and general manager of GM research Laboratories Div., told the American Petroleum Institute here this week. The tests were run at GM's Phoenix, Ariz., laboratory.

Much Lower—A 1951 Cadillac V-8 with 7.5 to 1 compression ratio averaged 19.8 miles per gal in similar tests, McCuen said.

Improvement in performance of the new GM "19xx" engine was attributed to: (1) Increased compression ratio and improved transmission, (2) higher octane fuel than commercially available.

Extensive test under city driving conditions confirm the findings of the Arizona tests, McCuen emphasized.

The potential improvement in efficiency of the internal combustion engine is such that sometime in the future it may be practical to increase compression ratios above the GM experimental engines' 12 to 1 ratio, McCuen predicted.

"If we can reach our present objective of 12-1 engines in production cars, which will give us a 30 pct increase in efficiency, large savings will result to our economy, to the petroleum industry and to the automobile industry," McCuen said.

Cadillac Quartet — The GM "19xx" engine was part of a quartet of Cadillacs to undergo simultaneous road tests. Tests were comparative and each car burned the same type fuel. The quartet included 1915, 1935 and 1951 Cadillac stock models. At 40 mph, the 1915 model traveled 9.5 miles per

HERC-ALLOY FEATURES

- America's first alloy steel sling chain... first to bear a serial number.
- Every CM HERC-ALLOY Sling Chain is alloy steel throughout...links, rings, hooks. There is only one grade... the best.
- Every chain is individually tested and accompanied by a certificate of registration.
- Links are side welded for maximum strength by patented INS WELL electric method.
- HERC-ALLOY Chains should never be annealed.
- HERC-ALLOY Chains are lighter...stronger... easier to handle...outlast ordinary chains 4 to 5 times...cost less on the job.

HERC-ALLOY...the chain you can SEE is safe

● A simple visual inspection* is all that is needed to determine the continued serviceability of a HERC-ALLOY Chain. That's why more and more of the important companies are standardizing on HERC-ALLOY...because HERC-ALLOY Chains are immune to

unseen dangerous crystallization... because you can see when a HERC-ALLOY Chain needs repairs or replacing.

*Write for your copy of this new, informative booklet. No charge.



COLUMBUS-McKINNON CHAIN CORPORATION

(Affiliated with Chisholm-Moore Hoist Corporation)

GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.
SALES OFFICES: New York • Chicago • Cleveland • San Francisco • Los Angeles

Non-Collapsible PRODUCTION

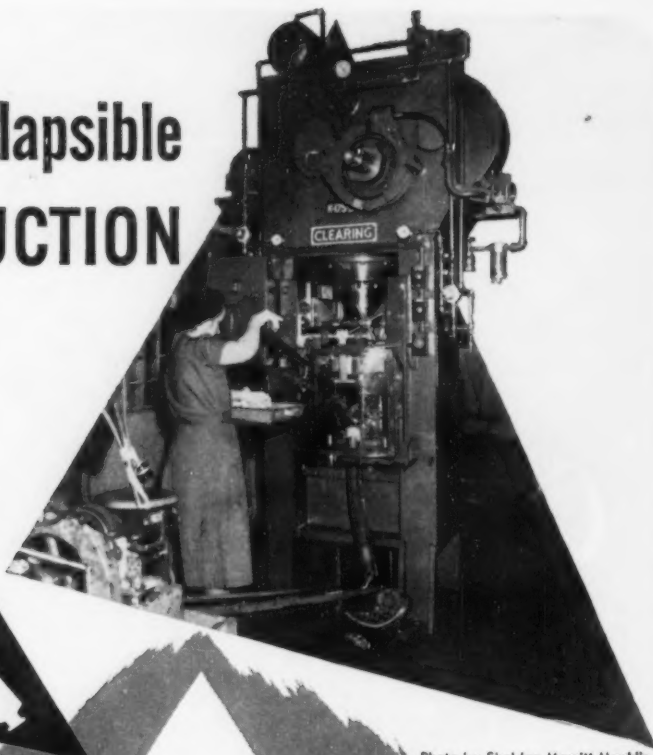


Photo by Sheldon Merritt Machlin

for Collapsible Tubes

With integrated production, where failure of one machine can stop a whole line, Peerless Tube Company chose Clearing presses for the extrusion operation which is the first stage in their lines. In the Bloomfield, New Jersey, plant, a group of 75-ton Clearings is now at work operating at 60 strokes per minute.

Clearing presses have demonstrated convincingly that they are dependable and can aid in maintaining production schedules at Peerless and many other companies throughout the world. We can help you with your mass production problems. Write us for details.

CLEARING MACHINE CORPORATION

6499 WEST 65TH STREET • CHICAGO 38, ILLINOIS

CLEARING PRESSES

THE WAY TO EFFICIENT MASS PRODUCTION



• News of Industry •

gal and reached a maximum speed of 55 mph. The "19xx" car averaged 27.6 miles per gal and maximum speed was 100.2 mph. Gasoline mileage for the 1951 stock Cadillac model of 19.8 may be compared with the 27.6 mileage reported for the latest GM 12-1 ratio engine and transmission.

Results of a recent GM car study show that since 1930 the average weight of U. S. passenger cars has increased from 3500 to 3750 lb. While small cars were increasing 500 lb in weight, very large cars were reduced by 1000 lb in weight the GM study shows.

Average rated hp rose from 75 in 1930 to 120 in 1950. By 1950 the spread in hp ranged from 85 to 160.

With greatly improved performance, the GM study shows there has been a constant upward trend in miles per gallon.

Alcoa's XA78S Ready Soon

Pittsburgh—Aluminum Co. of America's new high-strength aluminum alloy — XA78S — will be produced as sheet and plate and extrusions. Other forms will be produced as production problems with these shapes are worked out.

The new alloy will be available to plane builders for experimental use only.

The alloy, similar in composition to 75S, is of the aluminum-zinc-copper-magnesium family. XA78S is about 10 pct higher in tensile and yield strengths than 75S with about the same elongation and fatigue properties. Indications are the increase in mechanical properties will involve some sacrifice in workability.

Pittsburgh Steel Rolling Mill

Pittsburgh — Pittsburgh Steel Co. has awarded United Engineering & Foundry Co. the contract for its new 66-in. continuous hot strip sheet mill to be installed at the Allenport Works. Estimated capacity will be 900,000 tons per year. When the mill is completed, probably by July 1952, it will mark the company's first entry into the flat-rolled field.

Fast Tax Write-Off Granted 94 More Defense Plant Requests

Washington—Certificates of necessity for 94 new defense facilities have been granted by Defense Production Administration. Cost of that part of the facilities granted fast tax write-off is \$213,523,000. Total cost since inception of the program is \$4,582,550,363.

Certificates issued include: (Information below shows in sequence the company, product or use, amount applied for, amount eligible for, and pct certified.)

Commercial Metals Co., scrap iron, \$308,000, \$308,000, 75;
Edgewater Steel Co., steel wheels, \$244,751, \$244,751, 60;
Jordan River Line, towboats, \$2,150,000, \$1,065,000, 70, and \$1,085,000, 80;
Fretz-Moon Tube Co., Inc., steel pipe, \$543,000, \$543,000, 60;
Kaydon Engineering Corp., ball bearings, \$313,048, \$313,048, 85;
Hill City Towing Co., Inc., transportation, \$130,000, \$130,000, 70;
Seaboard Air Line R.R. Co., transportation, \$284,377, \$162,100, 65;
Oliver Iron & Steel Corp., hot forged nuts, \$220,983, \$220,983, 60;
Spencer Wire Corp., copper and steel wire, \$292,550, \$292,550, 75;
The Rex Corp., wire, insulating material, \$408,000, \$400,000, 75;
Kaydon Engineering Corp., ball bearings, \$150,000, \$150,000, 75;
Columbia Iron & Metal Co., ferrous scrap, \$392,902, \$392,902, 75;
Hutchison Pipe & Waste Material Co., scrap iron, \$34,000, \$34,000, 75;
Camden Machine Co., jet engine components, \$14,500, \$14,500, 85;
Intercontinental Mfg. Co., Inc., aircraft assemblies, \$12,428, \$12,428, 85;
Knutsen Machine Products, Inc., machining, \$117,585, \$101,585, 85;
Ashland Oil & Refining Co., transportation, \$4,025,000, \$2,275,000, 80, and \$1,750,000, 70;
Foote Mineral Co., tungsten metal, \$56,855, \$54,855, 85;
Kingston Products Corp., tank track shoe assemblies, \$206,307, \$206,307, 80;
Link-Belt Company, track sprocket, \$83,281, \$83,281, 85;
Matlow Corporation, scrap iron, \$45,283, \$45,283, 75;
The A-Shaw Co., Inc., scrap iron, \$198,130, \$198,130, 75;
Harvey Machine Co., Inc., rocket fuses, shells, \$1,670,000, \$1,670,000, 75;
Southern Pacific Co., transportation, \$17,260,646, \$17,260,646, 80;
Southern Pacific Co., transportation, \$26,620,585, \$26,620,585, 80;
Erie Railroad Co., transportation, \$22,929,885, \$22,929,885, 65;
Commercial Metals Co., scrap iron, \$308,000, \$308,000, 75;
Mississippi Valley Barge Line Co., transportation, \$900,000, \$900,000, 70;
Electro Refractories & Alloys Corp., crucibles, \$432,107, \$432,107, 75;
Aluminum Company of America, aluminum, \$1,709,000, \$1,709,000, 95;
W. L. Maxson Corp., research, \$200,000, \$200,000, 85;
Commercial Metals Co., metal scrap, \$148,000, \$148,000, 75;
Sta-Via Oil Co. dba Industrial Steel, reconditioning steel drums, \$398,700, \$323,700, 50;
Kingsbury Machine Tool Corp., machine tools, \$524,698, \$524,698, 80;
United States Foundry Corp., non-ferrous castings, \$25,671, \$25,671, 75;
General Cable Corp., wire, cables, \$28,919, \$28,919, 75;
Bay Cities Transportation Co., transportation, \$256,000, \$256,000, 80;
General Insulated Wire Works, Inc., wire, \$17,085, \$17,085, 75;
Hatfield Wire & Cable, field wire, \$890,139, \$890,139, 75;
James L. Entwistle Co., wire machinery, \$400,000, \$400,000, 75;
Okonite-Callender Cable Co., Inc., wire, \$80,140, \$80,140, 75;
Bay Cities Transportation Co., transportation, \$100,000, \$100,000, 70;

NORTHERN HI-LIFT CRANES

keep them rolling!



WHETHER handling strip, sheet, plate, structural steel or finished parts, a Northern Hi-Lift Crane helps keep your trucks and trailers rolling to make scheduled deliveries; handles big, heavy loads for fast loading; saves time, cost, and ruffled tempers.

For over fifty years Northern Cranes have consistently stressed three essential elements—safety, durability, dependable operation—with ample provision for meeting emergency demands under peak material handling conditions. They keep your production moving and your shipments rolling!

Write for our new Bulletin HL-115

NORTHERN ENGINEERING WORKS

2615 E. Atwater St., Detroit 7, Michigan

OVERHEAD ELECTRIC TRAVELING CRANES AND HOISTS

On cut-off jobs...

*This is the saw
that **SAVES**
TIME... MONEY... MANPOWER*



Wells No. 8 with wet cutting system

**WELLS No. 8
METAL CUTTING
BAND SAW**

WHETHER it's for production, general utility or both, the Wells No. 8 is an investment that will pay for itself.

TIME SAVINGS—Continuous cutting band saw action means blade is cutting *all* the time... portability feature means saw can be moved from job to job.

MANPOWER SAVING—Easy to set up and easy to operate, a Wells No. 8 does not require specially trained personnel... does not require attention during cutting.

MONEY SAVINGS—First cost is low; operating costs are low... band type blade removes minimum stock, cuts accurately to minimize rejects.

These savings can mean a lot in any shop... why not find out what they can mean to you. The Wells No. 8 has a capacity 8" x 16", rectangular, 8" dia., rounds. It is powered by a heavy duty 1/2 H.P. motor. Other sizes also available. For automatic repetitive cutting of identical lengths, the Wells No. 8 can be furnished with the Wells-O-Bar Feed Master. See your Wells Dealer for further information or write for literature.



Products by Wells are Practical
**METAL CUTTING
BAND SAWS**

WELLS MANUFACTURING CORPORATION
202 WASHINGTON AVE., THREE RIVERS, MICH.

• News of Industry •

Columbia Iron & Metal Co., ferrous scrap, \$120,180, \$120,180, 75;
Jennings Machine Corp., machine tools, \$56,500, \$56,500, 80;
Kaiser Aluminum & Chemical Corp., refractories, \$691,700, \$691,700, 85;
U. S. Industrial Chemicals, Inc., chemicals, \$840,000, \$840,000, 50;
The Medart Co., boring mills, \$529,944, \$529,944, 80;
Lava Crucible Co. of Pittsburgh, refractory shapes, \$148,138, \$148,138, 85;
Superior Machine & Engineering Co., machine tools, \$76,376, \$67,296, 80;
Kingsley Stamping Machine Co., holding blocks, \$7,812, \$7,812, 90;
Hawa Refractories Co., refractories, \$41,377, \$41,377, 85;
Hiram Swank's Sons, fire clay products, \$1,107,433 (tot.), \$1,068,833 (tot.), 85;
Heald Machine Co., machine tools, \$3,585,900, \$3,585,900, 75;
Corundite Refractories, Inc., firebrick, \$531,000, \$531,000, 85;
Sylvania Electric Products, Inc., coils \$93,275, \$93,275, 75; electron tubes, \$346,893, \$346,893, 80; electron tubes, \$67,301, \$67,301, 85; electron tubes, \$216,756, \$216,756, 80; production equipment, \$114,450, \$114,450, 85; production equipment, \$165,290, \$165,290, 85;
Western Electrical Instrument Corp., indicator radio, \$1,500,000, \$1,500,000, 80;
Reflectone Corp., training devices, \$7,882, \$7,882, 90;
Resistance Products Co., resistors, \$25,110, \$25,110, 80;
B. K. Sweeney Mfg. Co., tools, \$89,625, \$89,625, 80;
Chatham Electronics Corp., electronic tubes, \$23,276, \$23,276, 80;
Hardie-Tynes Mfg. Co., turbo blowers, \$71,533, \$71,533, 90;
Reed-Prentice Corp., lathes, \$1,257,825, \$1,257,825, 80;
Electrons, Inc., electronic tubes, \$35,000, \$35,000, 85;
Knapp-Monarch Co., tank components, none supports for tanks, \$17,863, \$17,863, 90;
South Bend Screw Products, Inc., engine parts, \$68,850, \$68,850, 90;
Independent Truckers, Inc., transportation, \$130,000, \$117,900, 70;
Lansdale Tube Co., electronic tubes, \$4,148,390, \$4,088,390, 75;
International Paper Co., fibreboard, \$15,660, 771, \$12,926,591, 55;
Avey Drilling Machine Co., machine tools, \$709,062, \$526,062, 75;
General Electric Co., parts for aircraft engines, \$14,964,921, \$14,462,947, 75;
Erie R.R. Co., transportation, \$1,400,734, \$1,400,734, 80;
National Gypsum Co., quicklime, \$1,269,507, \$1,269,507, 75;
Chicago, Rock Island & Pacific R.R. Co., transportation, \$181,194, \$181,194, 65;
Berwick Bay Towing Co., Inc., transportation, \$220,000, \$220,000, 80;
Chotin, Inc., transportation, \$90,000, \$90,000, 80;
Librascope, Inc., fire control equipment, \$18,017, \$18,017, 80;
Black Warrior Towing Co., Inc., transportation, (tow-boat), \$82,452, \$82,452, 70;
General Motors Corp., assembly of jet engine \$26,893,200, \$22,856,200, 50; J-65 engine, \$13,737,194, \$12,650,880, 50; J-65 engine, \$33,446,570, \$33,074,570, 50.

DPA Issues Revised List Of Defense Order Code Numbers

Washington—DO symbols were revised recently by the Defense Production Administration. Code numbers assigned to the various programs follow:

| DEPT. DO NO. | PROGRAM | MAJOR PROGRAM |
|-----------------|---------|---|
| 01 | Defense | Aircraft |
| 02 | Defense | Guided Missiles |
| 03 | Defense | Ships |
| 04 | Defense | Tank-Automotive |
| 05 | Defense | Weapons |
| 06 | Defense | Ammunitions |
| 07 | Defense | Electronics & Communications Equip. |
| 08 | Defense | Fuels & Lubricants |
| 09 | Defense | Clothing & Equipage |
| 10 | Defense | Transportation Equip. |
| 11 | Defense | Building Supplies & Equipment for Overseas Construction |

| DO NO. | DEPT. PROGRAM | MAJOR PROGRAM |
|--------|---|---|
| 12 | Defense | Subsistence |
| 19 | Defense | Production Equipment |
| 21 | Defense | Miscellaneous |
| 22 | Defense | Contract Construction |
| 25 | NPA for ECA | Foreign Additional Military Production |
| 26 | NPA for ECA | Foreign Non-Military Production |
| 37 | NPA for OIT | Foreign Production other than ECA (Non-Military) |
| 38 | NPA | U. S. Transportation Equipment |
| 40 | AEC | Operations |
| 41 | AEC | Construction |
| 42 | AEC | Construction Equipment |
| 43 | AEC | Privately-Owned Facilities |
| 45 | NPA Civil Aero. Adm. Natl. Adv. Comm. for Aero. | Miscellaneous |
| 46 | NPA | Plant Expansion |
| 47 | NPA | Canadian Programs |
| 48 | Interior | All Programs |
| 49 | State | Voice of America |
| 60 | Coast Guard | Miscellaneous |
| 61 | Coast Guard | Aircraft |
| 62 | Coast Guard | Construction |
| 63 | Coast Guard | Ships |
| 63 | NPA | Steel Shipping Containers |
| 75 | NPA | Mining Machinery |
| 87 | NPA (or delegatee) | Farm Machinery |
| 90 | NPA | U. S. Transportation Equip. |
| 91 | NPA | U. S. Transportation Equip. |
| 92 | NPA | U. S. Transportation Equip. |
| 94 | NPA | Oil Field Equip. |
| 97 | NPA (or delegatee) | MRO Supplies |
| 98 | NPA (or delegatee) | Production Equip. for Private Contractors |
| 99 | NPA (or delegatee) | Basketing, Consolidation of Small Orders as provided in NPA Reg. 2) |

Dr. James Long Named To Metallurgical Advisory Board

Washington — Dr. James R. Long, head of the Physical Metallurgy Section, Eastern Experiment Station, Bureau of Mines, has been added to the Metallurgical Advisory Board sponsored by the National Research Council of the National Academy of Sciences (THE IRON AGE, Mar. 1, 1951, p. 123).



Dr. James R. Long

The Board was organized to advise on metallurgical research and problems related to defense mobilization. Chairman is Dr. Robert F. Mehl, of Carnegie Institute of Technology.

Mr. Long served as chief of the Alloy Section, International Experimental Station, Bureau of Mines, Salt Lake City. He was active in titanium research.

Raise the Feed with T-J CUTTERS for Tough Die Steels!



Increase the output of your machines ... and *reduce costs* ... with T-J Die Sinking Milling Cutters! They're extra sturdy—you can raise the feed! These cutters made from a standard, extremely high grade steel ... properly machined ... scientifically heat-treated and accurately ground. This means *more work between grinds* ... easier cutting ... less breakage ... long cutter life! Wide range of T-J standard styles and sizes ... ready for your tough jobs! Send for new catalog 150. The Tomkins-Johnson Co., Jackson, Mich.

35 Years Experience

TOMKINS-JOHNSON

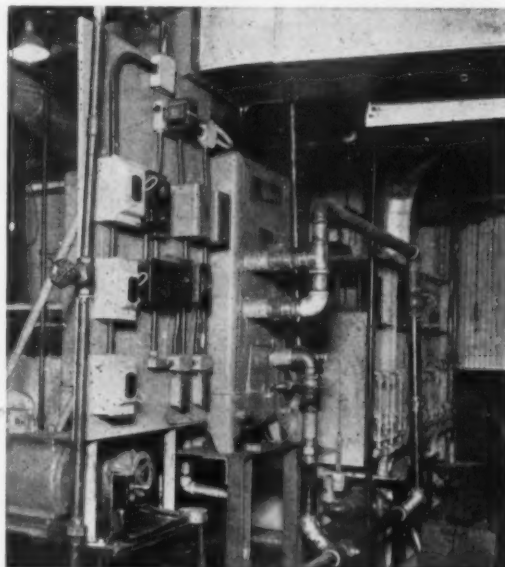
RIVETERS, AIR AND HYDRAULIC CYLINDERS, CUTTERS, CLINCHERS



Improve Quenching and You Get Better Heat Treating

Your Department can have a better arrangement with
Niagara Equipment that saves much space and
increases your production.

*This quench
bath cooler
gives you
control of
temperature
and pays for
itself quickly
with
water savings*



● The NIAGARA AERO HEAT EXCHANGER transfers the heat from the quench bath to atmospheric air by evaporative cooling. It never fails to remove the heat at the rate of input, giving you real control of the quench bath temperature. This prevents flashing of oil quenches. In all cases it improves physical properties, saves loss of your product from rejections and gives you faster production, increasing your heat treating capacity. You

can put heat back into the quench bath to save the losses of a "warm-up" period.

Savings in piping, pumping and power as well as great savings in cooling water return the cost of the equipment to you in a short time. The Niagara Aero Heat Exchanger saves nearly all of the water consumed by conventional cooling methods.

For the complete story of other benefits and savings, write for Bulletin 96.

NIAGARA BLOWER COMPANY

Over 35 Years Service in Industrial Air Engineering

Dept. IA, 405 Lexington Ave.

New York 17, N. Y.

Experienced District Engineers in all Principal Cities

STEEL CONSTRUCTION NEWS

Fabricated steel awards this week included the following:

- 1500 Tons, Baton Rouge, La., Solvay Products Div. of Allied Chemical & Die Co., plant addition, to Virginia Bridge Co., Birmingham.
- 335 Tons, Lehigh County, Pa., highway bridge on LR 443, sect. 16, for Pennsylvania State Dept. of Highways, to American Bridge Co., Pittsburgh.
- 200 Tons, Storey County, Ia., bridge project FW917 to Pittsburgh Des Moines Steel Co.
- 190 Tons, Cherokee County, Ia., bridge project SN1852 to Pittsburgh Des Moines Steel Co.
- 130 Tons, Dallas County, Ia., bridge project S1936/1/ to Pittsburgh Des Moines Steel Co.
- 120 Tons, Butler County, Ia., bridge project FN-185 to Des Moines Steel Co.

Fabricated steel inquiries this week included the following:

- 1070 Tons, Union County, N. J., highway bridges, New Jersey State Highway Dept., bids due May 15.
- 400 Tons, Lewisburg, Pa., Evangelical Community Hospital, bids due May 21.
- 300 Tons, Parkersburg, W. Va., roof material, American Viscose Co. Shop A, bids due May 4.
- 200 Tons, Camp Hill, Pa., Junior-Senior High School, bids due May 7.
- 185 Tons, Pittsburgh, RR bridge for Pennsylvania Railroad, bids due May 7.
- 150 Tons, Milford, Del., Memorial Hospital Building, pending.
- 150 Tons, Morrisville, Pa., office building, National Tube Co., pending.

Reinforcing bar awards this week included the following:

- 133 Tons, Lehigh County, Pa., highway bridge on LR 443, sect. 16, for Pennsylvania Dept. of Highways, John H. Swanger, Lancaster, low bidder.
- 120 Tons, Camden, N. J., Plant No. 2, Esterbrook Pen Co., Day & Zimmerman, general contractors.

Reinforcing bar inquiries this week included the following:

- 170 Tons, Crystal Lake, Ill., Community High School addition to Truscon Steel Co.
- 125 Tons, Evanston, Ill., McGraw Memorial Gymnasium to Truscon Steel Co.

J. C. Argetsinger Retires

Youngstown, Ohio — Ill-health has forced the resignation of J. Cameron Argetsinger, vice-president of Youngstown Sheet & Tube Co. for 15 years. Mr. Argetsinger had previously retired from two other positions, general counsel and secretary. He will now be affiliated with the firm as consultant. His retirement was accepted at a directors' reorganization meeting last week.

Mr. Argetsinger officially joined Youngstown Sheet & Tube in 1923 as assistant general counsel. He was later named general counsel, secretary and in 1936 became vice-president.



"Putting the Pressure"

on **SPEED NUTS**

... to assure highest quality fasteners
for your products

Fasteners must not fail. They are assigned important functions in the assembly of all types of products. And it is up to the fasteners to meet this responsibility.

By way of assuring the successful performance of **SPEED NUTS**, Tinnerman Products has perfected a system of vigilant quality control.

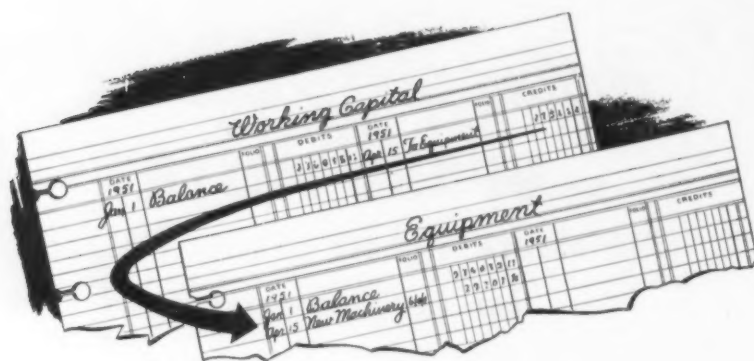
A key step in these control procedures is determining the average installation torque for each **SPEED NUT**. This is established by the Mechanized Torque Tester, a special "torture rack" designed

by Tinnerman engineers. The torque values set up by this tester assure the extreme holding power and great vibration resistance of **SPEED NUTS**.

This is only part of the Tinnerman quality control program. The entire procedure has been described in a new illustrated booklet, "The Story of Quality"—write for your copy. **TINNERMAN PRODUCTS, INC.**, Dept. 12, Box 6688, Cleveland 1, Ohio. In Canada: Dominion Fasteners Ltd., Hamilton. In Great Britain: Simmonds Aeroaccessories, Ltd., Treforest, Wales.

Test plates containing **SPEED NUT** and screw are inserted in Torque Tester. Rotating screw-driver bit engages screw. Dials register inch-pounds of installation, back-off and destruction torque.

TINNERMAN *Speed Nuts*



STOP losing working capital . . . when purchasing income-producing equipment

Whether your problem involves the purchase of a single piece of equipment or the complete installation of modern machinery in your plant, you can obtain the immediate use and benefit of the needed machines and facilities without losing any of the working capital of your business,—without draining the funds needed to carry inventory and receivables.

Financing these purchases through the Equipment Finance Department of The Philadelphia National Bank will enable you to buy income-producing machinery and often pay for it out of the profits realized through the operations of the machines themselves.

Regardless of the size of your business, you will find our long experience in financing manufacturers, distributors and operators an invaluable help in solving your equipment financing problems. We cordially invite you to discuss your situation with us.

*The Number One Bank in Philadelphia
in more ways than one*

**THE PHILADELPHIA
NATIONAL BANK**

Established 1803

PHILADELPHIA 1, PA.

Member Federal Deposit Insurance Corporation

• News of Industry •

Shortages Will Hold British Steel Output to 16 Million Tons

Margam and Trostre mills in Wales to make sheets, tinplate soon.

London—Shortages of imported scrap and iron ore will limit British iron and steel production to 16 million gross ingot tons during 1951. And even this figure may be optimistic.

British capacity is estimated at 16.75 million gross ingot tons. New mills at Margam and Trostre in South Wales are scheduled to start production in the second half of the year. They could turn out 130,000 tons of sheets and 40,000 tons of tinplate.

Arms production is not expected to receive an overall priority, and the metal-working industry will feel the brunt of shortages. Controls over production and allocation of scarce materials will be used where necessary.

High demand abroad will cut imports of finished steel. With a substantial growth in British rearmament needs, exports will fall below the 1950 high level.

Britain faces rising prices, fewer consumer goods, lower trade balance payments, and a decline in the rate of increase in national output.

Defense Costs — Rearmaments will cost \$13,160 million between 1951 and 1954. But the country will also aim at maintaining its export trade and a high level of investment at home.

Shortages of sulfur, cotton, zinc, copper and other key materials have begun to slow production. Big headache is sulfur, which affects the chemical, rubber and metals industries. The Government looks to Washington for aid on this and other items.

The rate of increase in production during 1951 is expected to fall. Since 1948 productivity has shown a 7 pct rise each year. The increase in 1951, however, may be only 4 pct. Total output is expected to equal the 1950 figure.

Half a million extra workers will be needed for defense pro-

WASHINGTON STEEL CORPORATION

MicroRold Stainless Steel

WASHINGTON, PENNSYLVANIA

PHONE: WASHINGTON 5900

T. S. FITCH
PRESIDENT

May 1, 1951

OPEN LETTER TO THE DISTRIBUTORS OF MICROROLD STAINLESS STEEL SHEETS

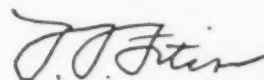
The current demand for Type 430 sheet is certainly a tribute to you distributors, and we want to take this opportunity to thank you for a job well done.

Because there is not sufficient nickel we asked our distributors, in July 1950, to explore the practicability of substituting Type 430 straight chrome stainless steel. While it is recognized that Type 430 is not a "cure-all", there are many applications where it does adequately provide the required corrosion resistance and other desirable characteristics.

We also wish to reassure you that we shall endeavor to allocate our production in an equitable manner.

Cordially yours,

WASHINGTON STEEL CORPORATION



T. S. Fitch
President

TSF:HH

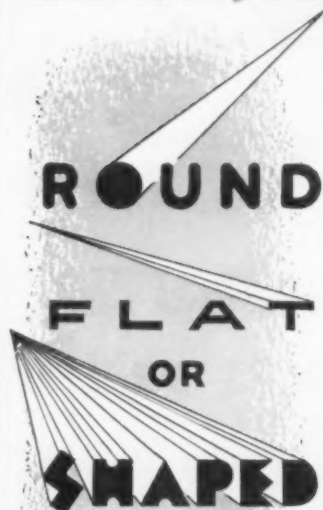
PS.—You are aware of the fact that the government regulations require us to supply 40% of our production for Defense Uses; this obviously means that we cannot provide as much tonnage for non-defense purposes as we used to provide, nor as much as we would like to provide, at this particular time.

T. S. F.



May 3, 1951

PAGE WIRE



**LOW CARBON
HIGH CARBON
STAINLESS
SPECIAL ALLOY
ARMCO IRON**

**You draw the Shape
—Page can draw
the Wire**

—the way you want it
for your production—whether
it's ALL of your product,
or only a part.

Cross-sectional areas up
to .250" square; widths to $\frac{3}{8}$ ";
width-to-thickness ratio
not exceeding 6 to 1.

**for Wire or
Information about Wire—**

*Get in touch
with Page!*



Monessen, Pa., Atlanta, Chicago,
Denver, Detroit, Los Angeles,
New York, Philadelphia, Portland,
San Francisco, Bridgeport, Conn.

**PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE**

• News of Industry •

duction by 1953-1954. Of these, 175,000 will be needed for aircraft and ordnance production. Substantial transfers of workers from civilian to defense will be made.

The overseas balance of payments, important factor in English economy, hinges on world supplies and prices of raw materials. At present Britain cannot count on supplies being available or on only reasonable increases in import prices.

Fuel and Power—Coal production for the first 10 weeks of 1951 is $1\frac{1}{2}$ million tons ahead of last year, and 1951 output is expected to reach 219-222 million tons. Electric generating capacity showed the largest 1950 increase.

Machine tool production is another big problem. Retooling of existing plants and creation of new capacity will cost \$280 million in the next 2 years. Machine tool output last year was valued at \$112 million, of which about 40 pct was exported.

Production will be expanded where practicable and supplies for civilian use will be cut. Orders for machine tools are being placed in Belgium, France, Germany, Italy, Sweden, Switzerland and the United States.

Reduction in sheet steel imports, mostly from the U. S., has hurt auto production. Allocation of new cars to the home market has been cut from 110,000 in 1950 to 80,000 in 1951. Truck allocations have been cut from 105,000 to 80,000.

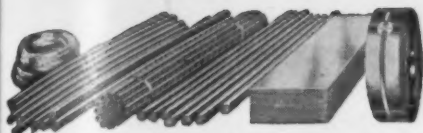
Home supplies of many consumer durable goods are expected to fall. Efforts will be made, however, to maintain the total volume of exports from the metalworking trades at the 1950 level.

MacKenzie to Get Herty Medal

Birmingham—Dr. J. T. MacKenzie, technical director of American Cast Iron Pipe Co., has been awarded the Herty Medal for research in metals. The award, sponsored by the Georgia State College of Women, will be presented May 5.

**Greater Tonnage
Per Edge of Blade**

**AMERICAN
SHEAR KNIFE CO.**
HOMESTEAD · PENNSYLVANIA



BRIDGEPORT BRASS COMPANY

COPPER ALLOY BULLETIN



MILLS IN BRIDGEPORT, CONN. AND INDIANAPOLIS, IND.—IN CANADA: NORANDA COPPER AND BRASS LIMITED, MONTREAL



Broken wheel being braze welded using low fuming bronze rod. Repaired impeller blades and cast iron housing are on the bench.

Braze Welding on the Increase for Repair and Maintenance

Braze welding showed its value as an essential maintenance tool in World War II. Consequently, it is expected to do even a bigger job in the period ahead when equipment shortages will become a major problem.

Broken machines and equipment cause serious stoppages in production while waiting for replacement castings and parts.

Urgent repairs can be made by braze welding in a matter of minutes or possibly hours depending upon the size of the job. If properly done, the bronze weld will be stronger than the parent metal.

Advantages of Braze Welding

Welders trained to repair parts with cast iron or steel welding rod will find

many advantages in braze welding with bronze welding rod alloys. In general, it is cheaper than welding with steel especially when big, heavy parts are involved.

When welding cast iron or steel parts with steel or iron welding rod, in order to prevent stresses and warping, it may be necessary to preheat slowly the entire casting prior to welding and to allow the casting to cool slowly after the weld is made. However, in the case of braze welding, elaborate preheating and slow cooling of the casting are seldom required.

With braze welding, it is only necessary to heat the surface of the parent metal to a cherry-red heat. This is sufficient to produce the "tinning action"

whereby the molten bronze firmly adheres to the red-hot surface of the parent metal.

Preparation

Certain precautions should be observed with braze welding. The broken section should be properly prepared and carefully cleaned.

Many welding operations require beveling on the edges of sheets and plates prior to joining, to enable the operator to obtain adequate penetration of the weld metal into the root of the weld. Where beveling is done by machining, little more cleaning is required. A wire brush may be used to remove any slight film of oil remaining after the machining process, and to eliminate any dirt picked up in handling. It will still be necessary to remove oxides, dirt, etc., near the edges of the joint as the machining cleans the metal only along the beveled edge itself.

Cleanliness Most Important

Oil or grease are especially harmful and should not be present even as a trace on the surface to be braze welded. Since broken metal parts of a machine are generally saturated with oil, it is a good practice to burn off the oil from the prepared surface by first playing a soft flame over that area. A neutral or slightly oxidizing flame should be used for braze welding. When grinding is done on cast iron, free carbon is smeared over the surface. It is desirable to use a highly oxidizing flame to preheat and remove this carbon. Special fluxes are also available for cast iron.

Any dirt, grease, oxides, etc., left on the work at the joint may easily be entrapped in the finished weld, preventing a strong bond between the parent metal and the bronze. Any foreign matter caught in the weld weakens the joint and increases the chances of early failure. When liquids or gases are concerned a weak bond may allow leakage along the joint between the base metal and the weld metal. (6599A)

continuous feeding of automatics

FOLLANSBEE POLISHED BLUE STRIP can be fed directly into automatics—a continuous, time-saving supply system for any kind of metal-forming operation.

from coils of polished blue strip

FOLLANSBEE POLISHED BLUE has a high-gloss, intense blue finish which is the distinguishing characteristic of this superior strip, and a sales feature for any product in which it is used.

sets a fast production pace

FOLLANSBEE POLISHED BLUE STRIP is furnished in continuous coils for productioneering with automatic machines. There's a Follansbee Steel Representative nearby who can tell you more about Follansbee Specialty Steels.



FOLLANSBEE STEEL CORPORATION
 GENERAL OFFICE, PITTSBURGH 30, PA.
 COLD ROLLED STEEL POLISHED BLUE SHEETS
 SEAMLESS TUBES ROLL FORMING
 NEW YORK, NEW YORK, PITTSBURGH, PHILADELPHIA, ST. LOUIS, MO.
 CHICAGO, ILL., CLEVELAND, OH., DETROIT, MI., KANSAS CITY, MO.
 LOS ANGELES, CALIF., MEMPHIS, TENN., MILWAUKEE, WIS., ST. PAUL, MINN.
 PITTSBURGH, PA. RICHMOND, VA. FORT WORTH, TEX.

Current High Tin Price Puts Alabama Mine Back in Operation

Birmingham—High tin prices have reawakened interest in Alabama's cassiterite tin deposits. One company is ready to begin operation and another is formulating plans for mining in Coosa County.

Soon to be reopened is a mine near Rockford, Ala. The operation is said to be the only mine of its kind and size in the United States.

The mine was operated experimentally during World War II. Production was at a rate of 200 tons a year. The mine was abandoned at the end of the war as unprofitable. The tin-oxide ore is obtained directly and not as a by-product.

Owned by the Coosa Cassiterite Corp., the mine is located on a 15-mile strip of 15,000 acres. Deposits assay from 5 to 30 per cent tin. Ore will be obtained by both deep and surface mining. In addition to tin, the mine is expected to yield mica, feldspar and titanium oxide. About 40 people will be used in the initial operation.

Plans for a second mining and processing operation in Coosa County were announced recently by Alabama-Coosa Tin Co. The company has mineral rights to 50,000 acres in Coosa County.

U. S. Bureau of Mine tests showed tin deposits in 473 of 480



DEFENSE CONTRACTORS

ENLIST BRANDT!

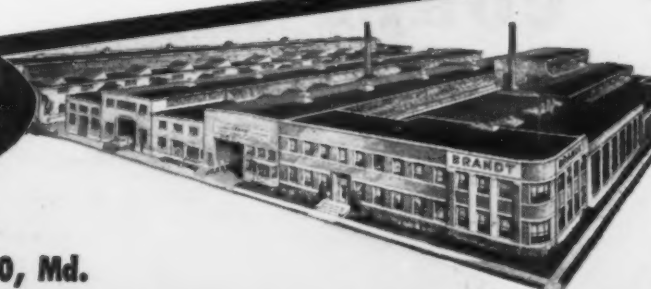
FOR MASS PRODUCED
STAMPINGS • WELDMENTS
SPOT WELDED ASSEMBLIES
PRESSED STEEL SHAPES



WRITE TODAY
for your copy of
this handy en-
gineers' fingertip
reference file.

BRANDT
BALTIMORE

CHARLES T. BRANDT, INC.
1700 Ridgely Street, Baltimore 30, Md.



UNIVERSITY OF MICHIGAN LIBRARIES

STAND-BY INDUSTRIAL PLANTS



AMMONIA and METHANOL PLANT

Morgantown Ordnance Works, Morgantown, West Virginia

Ammonia & Methanol Plant—Capacity per month: 18,700 tons of anhydrous ammonia, or 4,000,000 gallons of refined methanol plus 5,000 tons of anhydrous ammonia.

Hexylamine—Capacity per month: 4,000,000 lbs.

Formaldehyde—Capacity per month: 5,200,000 lbs.

COKE OVENS—74 Wilputte under-jet by-products ovens. Capacity per month approximately 35,000 tons. Will be turned over to successful bidder in operating condition.

Bids are being solicited on the following basis:

- The entire plant.
- The plant without the coke ovens.
- The coke ovens alone.

BIDS WILL BE OPENED 14 June 1951

District Engineer
Louisville District, Corps of Engineers
830 West Broadway, Louisville 1, Kentucky

CHLORINE and CAUSTIC SODA PLANT

Redstone Arsenal, Huntsville, Alabama

Hooker Type S Chlorine Cells, capacity per day: 100 tons, with an equivalent amount of caustic soda.

Buildings completely equipped. Excellent transportation facilities. Machinery, equipment and utilities in operating condition. Facilities are presently leased to Solvay Process Division, Allied Chemical & Dye Corporation. New lease will be effective 15 December 1951.

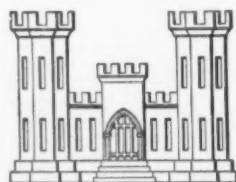
BIDS WILL BE OPENED 11 June 1951

District Engineer
Mobile District, Corps of Engineers
2301 Grant Street, Mobile 7, Alabama

Leases will be consummated through competitive bids. Sealed bids for the lease of these facilities will be received at the office of the District Engineer having jurisdiction. Detailed information, arrangements for inspections and bid forms may be obtained from the Real Estate Division of the District in which each plant is located.

CORPS OF ENGINEERS

U. S. ARMY
WASHINGTON, D. C.



holes diamond-drilled and checker-boarded over the property.

The Reconstruction Finance Company spent \$40,000 during World War II to develop a profitable process to extract tin from the rock. In 1947, the RFC said mining and milling of tin and associated minerals is commercially possible on this land.

In 1947 tin was bringing 57¢ a lb and it was not considered profitable to mine it. The price now is \$2.50 a lb.

Assay shows the Coosa ore ranged from 3 to 14 pct cassiterite. Cassiterite is tin in crystal form.

Alabama-Coosa has asked the Defense Minerals Administration for a loan of \$35 million. With this it can build a plant capable of handling 5000 tons of ore a day, from which 25 tons of tin would be extracted in addition to other minerals. Favorable action on the request is expected.

Canada Plans Its Biggest Fair

Toronto—Canada and European exhibitors will again display products and progress at the 1951 Canadian International Trade Fair to be held here from May 28 to June 8.

The fair will emphasize diversity of products and in the booths will be a great variety of wares ranging from makeup kits to massive presses. The fair's management predicts that this year's display will far surpass that of 1950 when there were 2200 exhibiting firms from 35 countries. New nations will be added to the roster this year. Among them are Japan, Mexico, Israel.

Research Potential at Peak

Cleveland, Ohio—The United States has the greatest research potential in the world which in dollars is now at a rate five times that of 10 years ago, said Dr. Clyde Williams, director of the Battelle Institute, at the annual meeting of the Ohio Chapter of the American Institute of Chemists, here. He was awarded the group's 1951 Scroll of Honor for Leadership in Technology.

Experimental Blast Furnace Projects Supported by West Europe

London—Cost of operating setting-up and operating two experimental blast furnace units will be shared by several Western European countries. The units will be used for research on a new pig iron production process.

The furnaces will be operated at Liege, Belgium, and Oberhausen, Germany. They will be of the low-shaft type, using a tonnage oxygen blast. Low-grade and powdery ores and high sulphur ores content will be used. Small coke, mechanically weak coke, raw coal and lignite will also be used in the experiments.

Work on the project was initiated by the Council of the Organization for European Economic Cooperation. Austria, Belgium, France, Germany, Greece, Italy and the Netherlands plan to support the project. The United Kingdom will make a financial contribution and Luxemburg and Canada may do the same.

Nonexplosive Device Breaks Coal

Wilmington, Del.—A nonexplosive device for breaking coal from a mine face has been developed by Du Pont Co. The new device works by the force of compressed gas. Used in a drilled hole the gas pressure breaks the coal.

The unit consists of a steel tube, chemicals and electrical activator. Electrical current supplies heat which activates the chemicals. The chemicals liberate gas which builds up pressure. A pressure disc breaks and the gas rushes through head ports and breaks down the coal.

Railroads Good Steel Customer

Washington—Iron and steel products cost American railroads \$509,506,000 in 1950, according to the Assn. of American Railroads. Next to fuel, railroads spent more money on steel than any other group of products. Expenditures for iron and steel in 1949 were \$454,079,000.

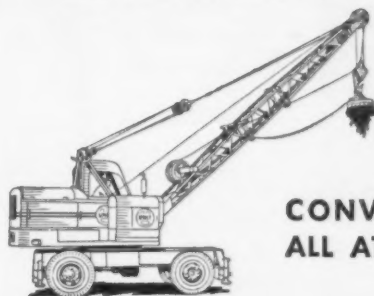


UNIT 357 on "earth moving" job, lifting globe into position at Midwest Fair exhibit.

It Picks a UNIT to do the Job!

Yes... it's really amazing what you can do with a UNIT Crane or Excavator. Take a UNIT 357 Mobile Crane, for example. It travels anywhere! Any time! Powered by ONE engine... controlled and operated by ONE man. Compact, it has light-truck mobility — the smoothest operating and easiest handling crane made. Works efficiently even in small yards where space is limited. FULL VISION CAB gives operator complete visibility in all directions.

UNIT 357 is self-propelled... mounted on six pneumatic tires... duals on the rear... singles on the front. Balanced weight distribution keeps entire undercarriage on ground while working. Dimensions meet all highway requirements. Get the complete UNIT 357 story. Write for bulletin.



CONVERTIBLE TO
ALL ATTACHMENTS



Rapid conversion, from one attachment or boom to another, is one of the many important UNIT 357 features. If the material handling operations in your plant call for magnet, crane, or clamshell, the UNIT 357 is the logical, and economical, answer to your problem. There is no limit to UNIT 357 versatility!

UNIT CRANE AND SHOVEL CORP.

6517 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.



SHOVELS • DRAGLINES • CLAMSHELLS
CRANES • TRENCHES • MAGNETS



NEW SERIES *Electro's* Portable GRINDING WHEELS HIGHER EFFICIENCY

Since we have been producing our own abrasives in our Canadian Electric Furnace Plant, coupled with maximum utilization of new developments in resin bonds, Electro's chemists and engineers have had a latitude in development work that they never had before.

The gains they have achieved in faster, cleaner cutting at lower temperatures are out of all apparent proportion to the fractional improvements in wheel composition, shape and size selection.

If a run is ahead of you on multiple castings of a given type or grade of metal, identical in shape and size, let us send a Field Engineer to show you how much you can gain with Electro Portable Wheels engineered to the job in hand.

Comparable gains for cutting-off, rough and precision grinding are demonstrable. Write, wire or phone. Job-side cooperation by an Electro Field Engineer places you under no obligation whatever.

Electro Refractories & Abrasives Corp.
344 Delaware Ave., Buffalo 2, N. Y.
West Coast Warehouse, Los Angeles
Canadian Electric Furnace Plant, P. Q.



TCI Opens Fairfield Works Construction for Capacity Growth

Birmingham — Tennessee Coal, Iron & Railroad Co. has started its multi-million dollar growth program to increase steel ingot capacity from 2,850,000 tons to 3,350,000 tons. Construction crews are working at several Fairfield steel works locations.

Excavation for the two new openhearth will begin shortly. Each will take 500 tons of steel and will be installed by the Virginia Bridge Co. Harbison-Walker Refractories Co. will supply the refractory brick. The furnaces will have a capacity of 210 tons a heat, each.

When they go into service other openhearth will be enlarged from 190 tons to 210 tons. A third galvanizing line is being installed on the sheet mill.

Taxes Drop Republic Net Earnings

Cleveland—Republic Steel Corp. felt the effect of increased taxes in its first quarter earnings. Earnings before taxes climbed 36 pct to \$41,546,377 this year from \$30,471,334 in the first quarter of 1950. But net earnings sank to \$12,271,377—a drop of 26 pct from the \$16,621,334 in 1950. Provision for taxes was \$29,275,000 as compared to \$13,850,000 for the corresponding quarter last year.

Republic's sales and operating revenue for the first quarter were at a record, increasing by 33 pct from \$197,527,446 in 1950 to \$263,540,103 in 1951.

Pullman Freight Car Backlog

Chicago—Profits of Pullman Inc. during 1950 amounted to \$9,842,262 compared with \$5,496,834 during 1949. This improved profit picture is due in part to the fact that railroad freight car buying during the past year was the highest since 1922 and the highest in history dollar-wise. At the end of the year the company had 31,848 freight cars on the books and by the end of March this backlog reached an all-time peak of 45,000.

Austin-Western

MERCURY

HOUGH
PAYLOADER

ROSS



Barber-Greene

GERJINGER
CARRIER CO.

THE
Quad-O-matic
LOADER



SCOOT-CRETE

THESE EXHIBITORS

at the MATERIALS HANDLING SHOW

Use **VICKERS**
HYDRAULICS

Vickers Hydraulics are ideally adapted to material handling equipment . . . they improve performance and reduce costs. Complete flexibility of power application and control, protection against abuse and overloading, simplicity of design and installation, compactness and minimum maintenance . . . all are characteristics of Vickers Hydraulics.

ALE



BUDA
ESTABLISHED 1881

CLARK
EQUIPMENT

PULL



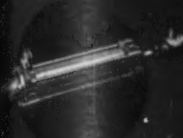
VICKERS
BALANCED
VANE PUMP



VICKERS
HYDRAULIC
POWER PACK



VICKERS
MULTIPLE UNIT
VALVE



VICKERS HYDRAULIC
POWER STEERING
BOOSTER



ELWELL
PARKER



HYSTER
FOR ANY LIFT OR PULL

DEMPSTER
DIGGSTER

INDUSTRIAL
Baker
TRUCKS



LIFTRUK

MONROE



Visit Vickers Display in Booth 524 National Machine Tooling Exposition, April 28 to May 4

VICKERS Incorporated • 1420 OAKMAN BLVD., DETROIT 32, MICH.
DIVISION OF THE SPERRY CORPORATION
ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

UNIVERSITY OF MICHIGAN LIBRARIES

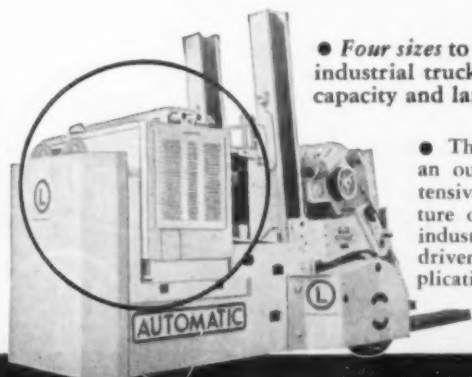
NEW! READY-POWER Diesel- electric units

**FOR HEAVY-DUTY
ELECTRIC INDUSTRIAL
TRUCK OPERATION**

● Featuring amazingly low-cost operation, long life and reduced maintenance.

● Four sizes to power electric industrial trucks of 6,000 lb. capacity and larger.

● These new Diesel-Electric units are an outgrowth of Ready-Power's extensive background in the manufacture of gas-electric power units for industrial trucks and Diesel-engine-driven generators for industrial applications.



The READY-POWER Co.

3822 Grand River Ave., Detroit 8, Michigan

• News of Industry •

Republic Steel Debentures Sale

Cleveland—Sale and delivery of \$60,000,000 principal amount of 3 pct sinking fund convertible debentures of Republic Steel Corp. to the Equitable Life Assurance Society of the United States and Metropolitan Life Insurance Co., both of New York, was announced.

Retirement will begin Mar. 1, 1954, with the final due date Mar. 1, 1966.

Vacuum Cleaner Output Down

Chicago — Government limitations on metals and materials needed in the manufacture of standard size household vacuum cleaners are said to have caused a drop in production of these items during March to 19.6 pct below the same month last year.

Reports on Plating Facilities

Chicago—A report on production facilities was made available to government agencies and contractors seeking to place rearmament business by the Chicago Electro-Platers Institute. In its survey, the Institute described its equipment, plating solutions, amperage, floor space, types of finishes, and names of member companies. Address of the group is 35 E. Wacker Drive, Chicago 1, Ill.

Steel Company Certificates

Washington—Certificates of necessity covering accelerated tax amortization have been issued Jones & Laughlin Steel Corp. For towboat and steamer equipment, \$720,175 (80 pct); barge construction, \$1,833,525 (70 pct).

National Steel Corp. has been issued a certificate covering \$6.5 million (80 pct) for cargo vessels.

Charge Ironfounders Fix Prices

London — English ironfounders dealing in cast iron rainwater goods, are accused of price fixing. The Monopolies and Restrictive Practices Commission reports the group has set prices and established exclusive dealing arrangements for 90 pct of the trade.



Stevens
AUTOMATIC PLATING MACHINE
BOOSTS CAPACITY 30%
...LOWERS COSTS AT RCA VICTOR

Costs are down—production capacity is up with this Stevens Plating Machine in operation at the Indianapolis plant of RCA Victor Division, Radio Corporation of America. The machine is used for plating television chassis bases, and W. M. Taylor, resident buyer, reports:

"The quality of plating has improved—deposits are more uniform and rejects are almost completely eliminated. The machine has increased our productive capacity 30% . . . And our Cost Accounting Section has indicated that we realize a finished labor cost savings of approximately \$4.64 per thousand."

These same production and cost advantages can

be brought to your plating room with Stevens Automatic equipment. The Stevens line of plating machines can be adapted to meet virtually any plating or metal-treating operation. Design features allow complete flexibility in adjusting the plating cycle to best meet your particular requirement.

Let your Stevens representative show you how Stevens machines can provide you with automatic operation—tailored to your production needs. Or, write direct to *Frederic B. Stevens, Inc., Detroit 16, Michigan*, for complete details.

METAL FINISHING EQUIPMENT AND SUPPLIES SINCE 1883



FREDERIC B.

BRANCHES • SALES OFFICES
 BUFFALO • NEW HAVEN • INDIANAPOLIS • CLEVELAND
Representatives in Principal Cities

STEVENS

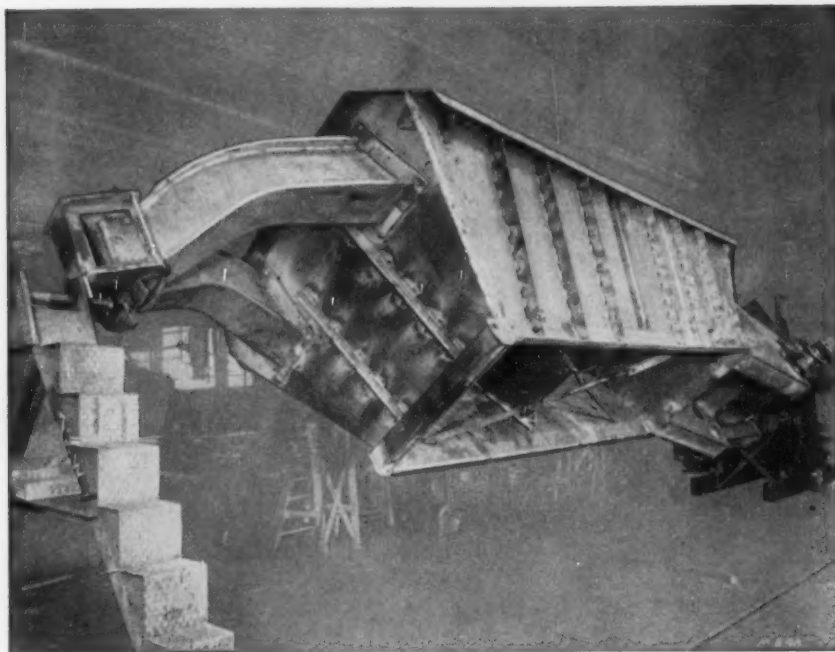
DETROIT 16, MICHIGAN

INCORPORATED

FREDERIC B. STEVENS OF CANADA, LTD.
 WINDSOR • TORONTO
 ONTARIO

May 3, 1951

145



VAN DORN

Weldments Feature

- ★ Strength
- ★ Uniformity
- ★ Economy

Yes, Van Dorn Weldments are widely known for their outstanding quality—for they are backed by Van Dorn's complete fabricating facilities . . . experienced design engineers . . . specially trained workmen . . . 77 years' experience in metal working.

Consult us about your requirements—no obligation, of course. The Van Dorn Iron Works Co., 2685 East 79th Street, Cleveland 4, Ohio.



Send For FREE WELDMENT BOOK

● Profusely illustrated; describes the many advantages of weldments, and Van Dorn's extensive facilities.

publications

Continued from Page 34

steel is supplied. Photos show typical applications for 17-4 PH stainless, which can be heat treated at 850° to 900° F to a tensile strength of 190 to 210,000 psi and a hardness of 40 to 45 Rc. The selection on 17-7 PH stainless contains similar information expanded to provide data on the various tempers available. *Armco Steel Corp.*

For free copy insert No. 7 on postcard, p. 35.

Diesel Maintenance

The Cummins definition of protective maintenance for diesels, as set forth in new 4-p. folder, is simply complete and adequate maintenance. It includes all periodic and progressive maintenance operations needed to obtain maximum periods of trouble-free service at the lowest possible cost. The service bulletin—"Protective Maintenance Increases Profits"—does not fit every operation, but will give the operator a basic maintenance program which can be changed as the experience of the owner dictates. *Cummins Engine Co., Inc.*

For free copy insert No. 8 on postcard, p. 35.

Safe Sling Practice

Safe loads and other engineering data for the Roebling Walles wire rope splice are detailed in a new 4-p. folder telling how this splice adds longer life to wire rope slings, makes handling easier and speeds up production. Made without bulky servings, it is shown to prevent undue snagging so that the sling loop can be pulled through restricted openings. Wire ends are buried in the body of the sling, eliminating sharp barbs. *John A. Roebling's Sons Co.*

For free copy insert No. 9 on postcard, p. 35.

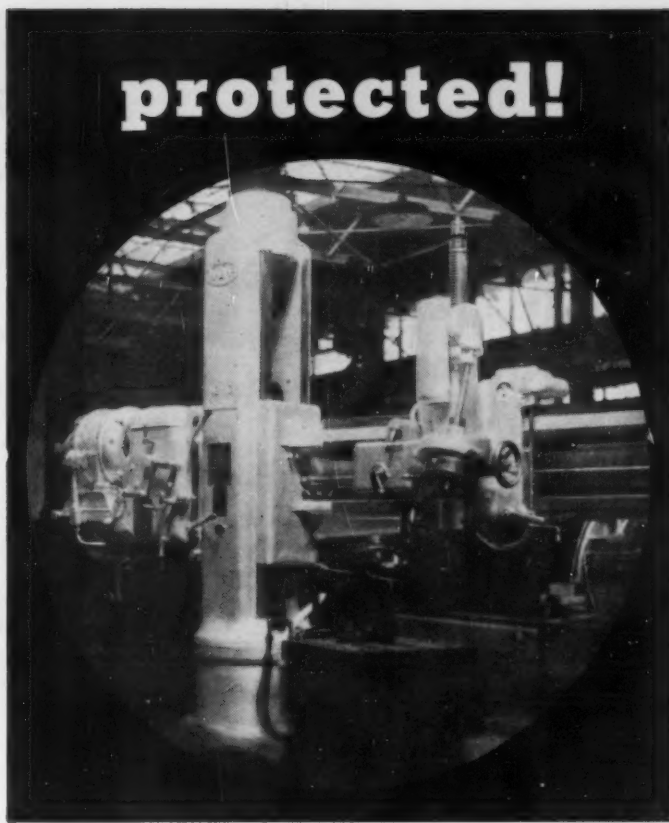
Large Induction Motors

The large, polyphase induction motor, and where it fits into the industrial picture, are the subject of a new 28-p. booklet describing use where reliability and overall costs are of primary importance. The booklet presents a quick summary of the two basic kinds of induction motors—Type CSF squirrel-cage motors for constant-speed drive, and Type CWF wound-rotor mo-

neglected!



protected!



Dearborn Check-Chart will help you stop rust before it starts!

Day and night, every minute of every hour, metal-hungry rust is destroying your valuable plant and equipment. You can stop rust now if you follow the simple Dearborn Plant Maintenance Survey.

With the Check-Chart as a guide, you can easily flag danger points where rust threatens—tanks, stacks, gutters, boilers and all metal surfaces throughout the plant. A NO-OX-ID coating, applied to these exposed metal surfaces, stops rust, *immediately*—before, and after, it starts!

Then, a simplified maintenance program will keep plant and equipment rust free . . . prevent costly production delays . . . wasted man-hours. A Dearborn representative will assist in selecting the correct NO-OX-ID to meet your requirements.

Note Our New Address

DEARBORN CHEMICAL COMPANY
Merchandise Mart Plaza • Chicago 54, Illinois

Dearborn

Reg. U.S. Pat. Off.

THE ORIGINAL RUST PREVENTIVE

NO — OX — ID
IRON + = RUST



WRITE FOR YOUR COPY

Dearborn has prepared this helpful guide to money-saving maintenance as a service to all industry. Your Check-Chart and NO-OX-ID Plant Maintenance Survey will be furnished—without cost. The coupon is for your convenience.

DEARBORN CHEMICAL COMPANY
Merchandise Mart Plaza, Dept. 1A
Chicago 54, Illinois

Gentlemen:

- ☐ Please send my copy of the Dearborn Plant Maintenance Survey.
- ☐ Have a Dearborn representative call.

Name

Company

Address

City.....Zone.....State.....

CASE No. 435
Spark Plug Manufacturer

\$10,000 saved yearly
for six years on installation cost-
ing \$3,500, job performed better

(a) Savings in Effort (estimated) 50%
(b) Savings in Time (estimated) 50%
(c) Savings in Space (estimated) 20%
(d) Savings also in less breakage

QUOTING CUSTOMER'S* STATEMENT:

"We estimate a savings up to \$10,000 per year, in the past six years, which can be attributed directly to the installation of the Logan Conveyors. The installation of Conveyors allowed us to increase production in our assembly departments eight (8) times, with no additional handlers. The conveyor is readily adapted to handling small parts in trays or racks and we handle millions of parts in this manner. The Logan Conveyor in our assembly department handles parts at two different levels and also makes two 90° turns. We have found that the conveyor will handle our assemblies more gently than is possible with manual handling and also Logan Conveyors are more efficient because they will always position the work in front of the operator, after the work is once placed on the conveyor."

*Name on Request

\$60,000 saved in 6 years is real money in anybody's business.

Proportionate savings can be made in many manufacturing operations with properly engineered conveying equipment. Write today for a copy of "Key to Lower Costs."

THE KEY TO LOWER COSTS

Logan Conveyors

LOGAN CO., 545 CABEL ST., LOUISVILLE, KY.

publications

Continued

tors for adjustable speed drive. The unit-type stator and the all-metal rotor are discussed, and the bearing accessibility provided by split bearings and half brackets is illustrated, as is the copper-fin construction. Each of the special enclosures for severe or unusual operating conditions is illustrated. *Westinghouse Electric Corp.*

For free copy insert No. 10 on postcard, p. 35.

All Water Is Not Wet

The story of wet water and its possibilities for industry is told in a new booklet which is a layman's description of the current industrial applications of wet water and the simple Aquadyne system of making an economic supply available without elaborate equipment. It is the intent of this new folder to acquaint responsible executives with enough of the fundamental facts and highlights to spark money-saving applications in their own plants. *Aquadyne Corp.*

For free copy insert No. 11 on postcard, p. 35.

Cleaning Machines

Illustrated and described in a new 4-p. bulletin is precision equipment for small parts manufacturing and maintenance. The catalog covers small parts cleaning machines, cleaning and rinsing solutions, flexible shaft equipment, polishing motors, crystal cement, mallets and hammers and rust remover; the company also makes other motors and smaller cleaning machines, both automatic and manually operated. *L & R Mfg. Co.*

For free copy insert No. 12 on postcard, p. 35.

Plastic Pipe, Fittings

Complete engineering data on tubing, pipe, valves and fittings of Ace-Saran and Ace-Parian (polyethylene) plastics are given in a new 16-p. bulletin. Resistant to most chemicals, these materials are light-weight, durable, and have high impact strength. Tables of properties and resistance on a long list of common chemicals are presented. The bulletin also gives bursting and working pressures, standard sizes and weights, and offers other helpful information on

Continued
ive. The
all-metal
he bear-
by split
is illus-
fin con-
special
unusual
ustrated.
p.
ard, p. 25.

and its
told in a
ayman's
t indus-
ater and
stem of
y avail-
quipment.
w folder
ecutives
amental
spark
in their
p.
ard, p. 25.

d in a
n equip-
manufac-
catalog
ng ma-
g solu-
ent, pol-
cement,
rust re-
makes
cleaning
d man-
Co.
ard, p. 25.

ata on
ings of
(poly-
n in a
ant to
ials are
l have
bles of
a long
re pre-
gives
ssures,
s, and
tion on

AGE

3 new structures for the United Nations

...fabricated and erected by the
AMERICAN BRIDGE COMPANY



AGAINST A BACKGROUND of the completed UN Secretariat Building, for which American Bridge Company fabricated and erected 13,800 tons of structural steelwork, two bridgemen direct the unloading of steel columns and beams for the North Parking Space at the UN site.

Now that the UN Secretariat Building is completed, American Bridge is erecting the Meeting Halls Building and cover for the Franklin D. Roosevelt Drive, General Assembly Hall and North Parking Space. When finished these structures will contain 18,600 tons of fabricated steel framework, in addition to the 13,800 tons which went into the Secretariat Building.

This is typical of how the time-tested and proved experience of the American Bridge Company has been linked to the latest in modern architectural and engineering design to create structures of unusual beauty and enduring strength. Hundreds of steel-framed buildings all over the country are proof that for sturdy, economical structural work you can't beat rigid steel construction—and for varied experience . . . unexcelled facilities . . . trained personnel, you can't go wrong when you depend on American Bridge.

AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

Contracting Offices in: AMBRIDGE • BALTIMORE • BOSTON • CHICAGO • CINCINNATI • CLEVELAND • DENVER
DETROIT • DULUTH • ELMIRA • GARY • MINNEAPOLIS • NEW YORK • PHILADELPHIA • PITTSBURGH
PORTLAND, ORE. • ST. LOUIS • SAN FRANCISCO • TRENTON
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

Architects: Board of Architects
headed by Wallace K. Harrison
Engineers: Madigan-Hyland,
Praeger

AMERICAN BRIDGE BEGINS erection of the steel framework for the cover of the Franklin D. Roosevelt Drive at the UN Headquarters. Eventually the entire drive from 42nd St. to 57th St. at East River will be covered. In the right foreground the framework for the Meeting Halls Building can be seen. When completed, this building will extend, by cantilever construction, over the drive to the edge of the river.

AVAILABLE NOW! For showing in churches, schools, clubs, industries, the new sound and color motion picture—**BUILDING FOR THE NATIONS**—a candid, factual photographic record of the highlights of the fabrication and erection of the United Nations' Secretariat Building in New York City.



AMERICAN BRIDGE

UNITED STATES STEEL

UNIVERSITY OF MICHIGAN LIBRARIES



Handling Work is **STOP** and **GO...**

It's an intermittent service in which battery industrial trucks have many natural advantages. They start instantly, accelerate smoothly, operate quietly, give off no fumes, and consume no power during stops.


★

Battery trucks "deliver the goods" with double dependability when they are driven by EDISON Nickel - Iron - Alkaline Storage Batteries. With steel cell construction, an electrolyte which preserves steel, and a foolproof electrochemical principle of operation, they are the most durable, trouble-free and long-lived of all batteries.

★

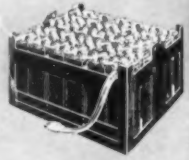
If you do not already use EDISON, get a current price quotation . . . you will probably find initial cost *much lower than you think*; annual operating cost *less than you pay now!*

ADVANTAGES OF EDISON NICKEL-IRON-ALKALINE BATTERIES:
They're mechanically durable; electrically foolproof; quickly and easily charged; simple to maintain; not injured by standing idle.



EDISON

Nickel • Iron • Alkaline
STORAGE BATTERIES



EDISON STORAGE BATTERY DIVISION
of Thomas A. Edison, Incorporated, West Orange, N. J.
In Canada: International Equipment Co., Ltd., Montreal and Toronto

publications

Continued

the fabrication of complete systems from these new plastics. *American Hard Rubber Co.*

For free copy insert No. 13 on postcard, p. 35.

Lighting Fixture

The new Appleton "V-51" series convertible vaportight lighting fixture is fully described and illustrated, for pendant, ceiling or bracket mounting, with or without reflectors and guards, in a new 20-p. catalog. Wattages, weights and dimensional data are listed in the bulletin. *Appleton Electric Co.*

For free copy insert No. 14 on postcard, p. 35.

Roller Chains, Sprockets

A full line of roller chains and sprockets from stock is covered in a new catalog providing complete specifications and engineering reference tables on American standard roller chains, sprockets and attachments. Dimensional data, strengths and weights are also supplied on allied products, such as block chain, cable chain and flexible couplings. *Whitney Chain Co.*

For free copy insert No. 15 on postcard, p. 35.

Tube-Supported Wall

A new 12-p. catalog on tube-supported walls for industrial boilers describes in detail how Bigelow-Liptak walls may be suspended directly from boiler tubes with resulting savings in steel and erection time. Engineering drawings show typical jobs and describe how the enclosure is fastened to the boiler tubes. The inside spread shows a series of photos of a job being erected. *Bigelow-Liptak Corp.*

For free copy insert No. 16 on postcard, p. 35.

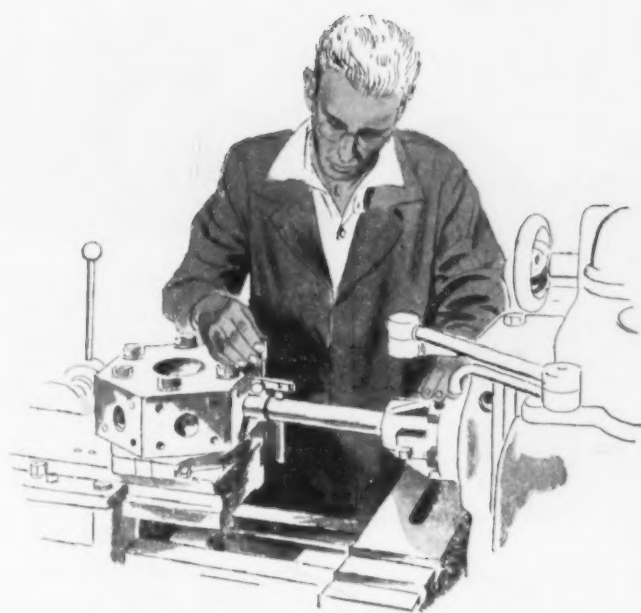
Silver-Brazing Alloys

The six "dos" and the two "don'ts" of sound procedure in using All-State silver-brazing alloys are fully covered in a new issue of a miniature folder on the dispenser for these valuable materials. While simple and brief, these recommendations are especially helpful to those turning to the silver solders to replace harder-to-get, more critical materials. *All-State Welding Alloys Co., Inc.*

For free copy insert No. 17 on postcard, p. 35.

Resume Your Reading on Page 35

★



Contrasting with the constant pressure for production in other departments at Warner & Swasey is the calm, methodical work of one group of our men. These men are our severest critics—our final inspectors.

By the time an assembled turret lathe reaches one of these final inspectors, its individual parts have already passed 15,000 inspections!

But that is not enough! The final inspector carefully rechecks the completed machine — *proves* beyond doubt that it is ready to turn out the high precision work for which it is designed. Only then does he *sign his name* to a written report certifying that the turret lathe he passes is as perfect as human skill can make it.

Like our other departments, "final inspection" is working day and night to get machine tools to our shipping platform on schedule. But despite stepped-up production and urgent delivery dates, *no* machine leaves our plant until it meets the long-established Warner & Swasey standards for accuracy and dependability.

*Our severest critics
are right in our own plant!*



YOU CAN MACHINE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY TURRET LATHES, AUTOMATICS AND TAPPING MACHINES

May 3, 1951

151

UNIVERSITY OF MICHIGAN LIBRARIES

Behind your television screen...



Continental Rubber gets into the act

In the unseen act behind your television screen, a small cup-shaped rubber shield plays an important role. This shield fits over the anode on the side of the tube. Its function is to "seal in" high voltage current and thus prevent surface discharges that cause picture distortion.

Ordinary rubber compounds, of course, can't fill the bill. This rubber part must have exceptional dielectric properties and unusual stability under sustained heat. It must resist the deteriorating effects of ozone created by electrical discharges. In addition, the rubber shield must be precision molded to insure proper seating against the side of the television tube.

Continental engineers, working closely with Ucinite Company engineers, have met these exacting requirements. This technical cooperation typifies the service in rubber offered by Continental.

When you need better engineered rubber parts, why not enlist the service of specialists in molded and extruded rubber?



LET US SEND YOU THIS CATALOG

This new engineering catalog lists hundreds of standard grommets, bushings, rings and extruded shapes. It will be a valuable addition to your working file. Send for your copy today or . . .

See our Catalog in Sweet's File for Product Designers

MANUFACTURERS SINCE 1903

CONTINENTAL RUBBER WORKS

1985 LIBERTY BOULEVARD • ERIE 6, PENNSYLVANIA



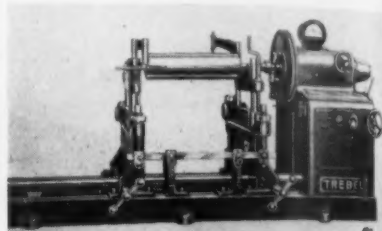
BRANCHES

| | | | |
|------------------|--------------------|---------------------|-----------------------|
| Baltimore, Md. | Cleveland, Ohio | Kansas City, Mo. | Pittsburgh, Pa. |
| Boston, Mass. | Dayton, Ohio | Los Angeles, Calif. | Rochester, N. Y. |
| Buffalo, N. Y. | Detroit, Mich. | Memphis, Tenn. | St. Louis, Mo. |
| Chicago, Ill. | Hartford, Conn. | New York, N. Y. | San Francisco, Calif. |
| Cincinnati, Ohio | Indianapolis, Ind. | Philadelphia, Pa. | Syracuse, N. Y. |

production ideas

Continued from Page 38

current in a solenoid. A measuring beam connects the bearings with measuring blocks, placed beneath predetermined planes of compensation of the test piece. Measuring springs introduce counter-oscillations into the measuring

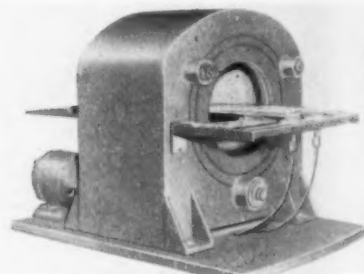


beam. Hand wheels regulate the magnitude and direction until unbalance becomes equalized, canceling out the oscillations. Readings can be made in 20 to 40 sec with test pieces ranging from 4 oz to 13,000 lb. *Kurt Orban Co., Inc.* For more data insert No. 32 on postcard, p. 35.

Coating Machine

Applies full coverage coating, 0.008 to 0.025 in. thick, in one passage.

Full coverage is accomplished by means of high speed rotors that atomize and direct the paint to the work being passed on a conveyor



through the rotating bowl of the Norris Gyromat. Excess material is caught by the machine's rotating inner bowl, returned to the annulus in its former fluid state and reused, a vapor pressure equilibrium being automatically maintained. *Gyromat Corp.*

For more data insert No. 33 on postcard, p. 35.

Micro Hardness Tester

Improvements in testing load range, mechanical stage, specimen vise.

The testing load range of the Kentron micro hardness tester has been increased tenfold; it now ap-



When We Sell Wire WE GIVE SERVICE

There's more than quality steel in Continental wire—there's service . . . the kind of helpful service that frequently results in the saving of both time and money for our customers. Continental takes a personal interest in every customer. We make it a point to provide exactly the right grade or temper of wire for a specific need. Our many years of experience in producing wire for more than a thousand uses often enables us to provide wire users with practical and beneficial advice that helps them build better products. Our location and size permit this close, family relationship and make us a select wire source for our customers.



Special Wire Shapes For Special Applications

Many of our customers find that shaped wire helps them trim costs and add sales appeal to otherwise ordinary products. Providing wire in special shapes is another Continental service for its customers.

*Trade Marks Reg. U.S. Pat. Off.



CONTINENTAL STEEL CORPORATION

GENERAL OFFICES • KOKOMO, INDIANA

PRODUCERS OF Manufacturer's Wire in many sizes, shapes, tempers and finishes, including Galvanized,

KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, Lead Coated, and special wire.

ALSO, Coated and Uncoated Steel Sheets, Nails, Continental Chain Link Fence, and other products

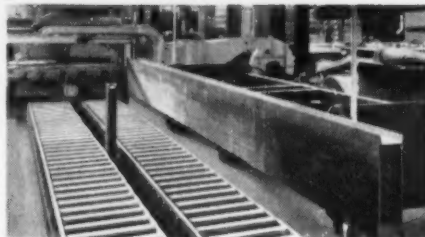
when you think of
efficient conveying
systems

THE NAME TO REMEMBER IS

ALVEY-FERGUSON

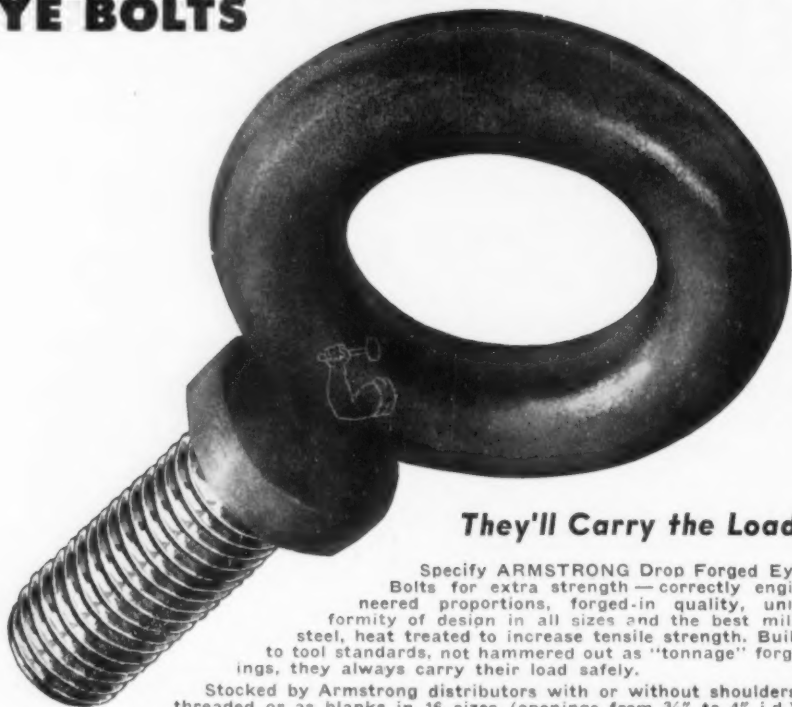
THE ORIGINAL—SINCE 1901

THE ALVEY-FERGUSON CO.
558 DISNEY STREET
CINCINNATI 9, OHIO
OFFICES IN PRINCIPAL CITIES



You can SEE the Superiority of Alvey-Ferguson Conveyor Engineering

ARMSTRONG *Drop Forged* EYE BOLTS



They'll Carry the Load

Specify ARMSTRONG Drop Forged Eye Bolts for extra strength—correctly engineered proportions, forged-in quality, uniformity of design in all sizes and the best mild steel, heat treated to increase tensile strength. Built to tool standards, not hammered out as "tonnage" forgings, they always carry their load safely.

Stocked by Armstrong distributors with or without shoulders, threaded or as blanks in 16 sizes (openings from $\frac{3}{4}$ " to 4" i.d.).

Write for Catalog

ARMSTRONG BROS. TOOL CO.
5209 W. Armstrong Avenue Chicago 30, U.S.A.

Eastern Warehouse and Sales: 199 Lafayette St., New York 12, N. Y.
Pacific Coast Whse. and Sales Office: 1275 Mission St., San Francisco 3, Calif.



preparing for defense production?

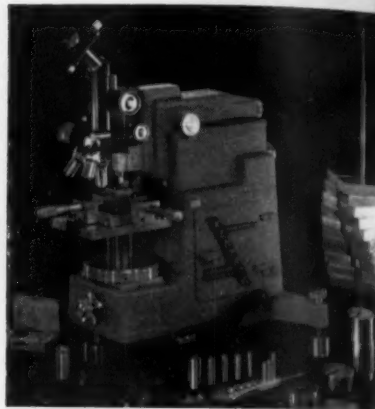


write for complete information!

production ideas

Continued

plies dead weight loads from 1 to 10,000 g. The mechanical stage is designed so that the test specimen slides underneath high powered objectives up to and including 1000X magnification, without disturbing the original focusing of the microscope. The specimen always remains in focus from testing to viewing position. A new specimen vise



for holding mounted specimens fits into the mechanical stage and is indexed. Frictionless leveling of the tester is provided by three supporting pads. Standard equipment includes triple objective metallurgical microscope, weights for applying 1 to 1000 g, precise mechanical stage and calibrated reference blocks. Extras are Knoop indenters, 136° diamond pyramid indenters, heavy weights and specimen vises. *Kent Cliff Laboratories.*

For more data insert No. 34 on postcard, p. 35.

Heavy-Duty Clamp Device

Handles bulky loads without pallets.

Heavier slide arms and guides that permit increased arm travel are features of the more ruggedly built clamp device for use on Clark Utilitrac models and on the Yardlift-60, gas-powered pneumatic-tired 6000-lb model. The new clamp is suitable for handling bales, large boxes, crates and other extra heavy, bulky units able to withstand the heavy squeezing. Clamping pressures up to 6000 lb at the heel of the arms are available. The clamp is hydraulically actuated with separate double-acting hydraulic cylinders to actuate each clamp arm for extension and clamping. Clamp

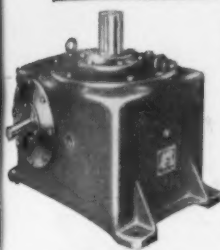
A FOOTE BROS. DRIVE

FOR ANY POWER TRANSMISSION NEED

Any requirement for power transmission equipment can be met from Foote Bros. complete line of enclosed gear drives.

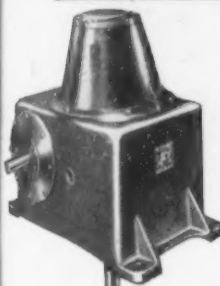
Nearly a century of engineering and manufacturing experience is back of these drives. Three large plants contain the newest in gear cutting equipment. New techniques in manufacture—better control of materials—improved manufacturing methods—all assure superior enclosed gear drives. Mail the coupon below for bulletins in which you are interested.

VERTICAL DRIVES



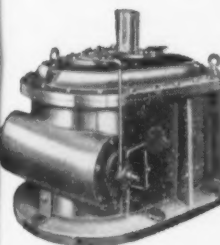
HYGRADE

A quality line of heavy-duty drives, incorporating precision worm gearing that assures high efficiency and load-carrying capacity. Vertical output shaft may extend upward, downward or both. Ratios from $4\frac{1}{2}$ to 1 up to 4,108 to 1. Capacity up to 260 horsepower. Write for Bulletin HGA.



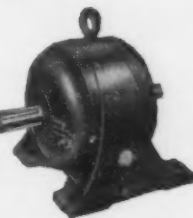
HYTOP

Similar in design to the Hygrade Vertical Drives, but with wider, low-speed bearing span to accommodate long, unsupported vertical output shaft extensions. Vertical output shaft may extend upward, downward or both. Write for Bulletin HGA.



WORM-HELICAL

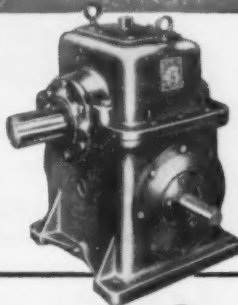
These drives are admirably suited to applications which require horizontal input and vertical output shafts for heavy-duty service. Available in ratios from approximately 30 to 250 to 1 and a capacity range up to 120 horsepower. Write for information.



LINE-O-POWER

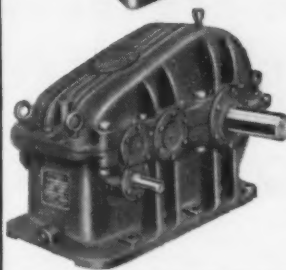
Economical in original cost and operation, these drives incorporate Duti-Rated Gears which have file-hard tooth services and ductile cores, assuring long life. Compact in design. Available in double or triple reductions, with ratios from 5 to 1 up to 238 to 1 and capacity range from 1 up to 200 horsepower. Write for Bulletin LPB.

HORIZONTAL DRIVES



HYGRADE

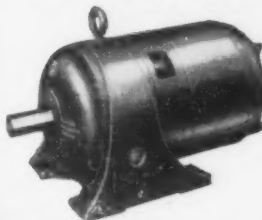
High quality, heavy duty, enclosed worm gearing that assures high efficiency and load-carrying capacity. Available in a wide range of types to meet any need. Ratios from $4\frac{1}{2}$ to 1 up to 4,108 to 1. Capacity up to 260 horsepower. Write for Bulletin HGA.



MAXI-POWER

Heavy-duty helical gear drives. Available in single reduction units, ratios up to 9.91 to 1; capacities up to 1,550 horsepower; double-reduction units, ratios from 9.32 up to 71 to 1, capacities to 1100 horsepower; triple reduction units, ratios from 79 up to 360 to 1, capacities up to 420 horsepower. Write for Bulletin MPB.

FOOTE BROS.-LOUIS ALLIS Gearmotors



A compact line of gearmotors in 17 sizes in single, double and triple reductions, incorporating Duti-Rated Gears that assure long wear life and maximum load-carrying capacity. Units use Louis Allis high quality motors—available in a wide range of enclosures to meet any condition. Write for Bulletin GMA.

FOOTE BROS. GEAR AND MACHINE CORPORATION
4545 South Western Boulevard, Chicago 9, Illinois

FOOTE BROS.

Better Power Transmission Through Better Gears

Foote Bros. Gear and Machine Corporation
Dept. M, 4545 South Western Boulevard, Chicago 9, Illinois

Please send me the bulletins checked below:

- ☐ Bulletin HGA { Horizontal Hygrade
Vertical Hygrade
☐ Bulletin LPB Line-O-Power
☐ Bulletin MPB Maxi-Power
☐ Bulletin GMA Foote Bros.-Louis Allis Gearmotors

Name.....Position.....

Company.....

Address.....

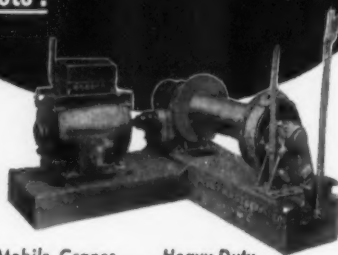
City.....Zone.....State.....



ONE MAN and a *Silent Hoist* electric-driven Car Puller can pull and spot cars . . . warp barges . . . drag pallet or skid loads, logs, quarry stone, heavy equipment . . . bend pipe . . . open hopper doors...etc... and Cut Your Materials-Handling Costs!

SOME TYPICAL USERS: Armstrong Cork Co.; Bethlehem Steel; Cross, Austin & Ireland; Great Northern Rwy.; Johns Manville; Hercules Powder; NYC RR; Nicholson File Co.; Rochester Gas & Elec.; Socony-Vacuum Oil, etc.

Write for Bulletin No. 64A

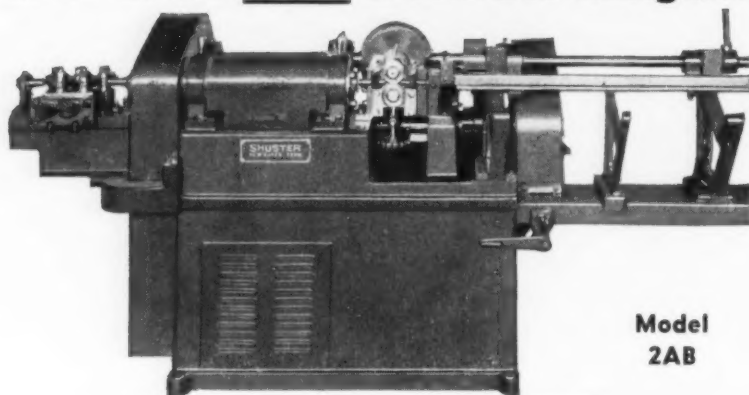


Mfrs. of KRANE KAR Swing-Boom Mobile Cranes . . . Heavy-Duty Fork LIFTRUK . . . Cranes for Motor Trucks . . . Capstans, Gypsies, Single and Double Drum Winches.

SILENT HOIST & CRANE CO. 851 63rd ST., BROOKLYN 20, N.Y.

This New, Economical **SHUSTER**

Cuts Costs AND Accurate Lengths!



**Model
2AB**

Capacity 3/16" dia.—1/2" dia. (BASIC WIRE)

Automatic

WIRE STRAIGHTENING AND CUTTING MACHINE

This new "SHUSTER"—with its five gear-driven straightening rolls—handles even badly twisted wire with ease. Square and rectangular as well as round wire may be straightened and cut to exact lengths. Other "Shuster" features that assure high speed, quality production are: almost continuous wire travel, rapid cut-off, V-belt motor drive, ball and roller bearings, and extreme rigidity throughout. Write for details.

Mfd. by **METTLER MACHINE TOOL, INC.**

132E Lawrence St.

New Haven, Conn.

Representatives in all principal cities and foreign countries.

production ideas

Continued

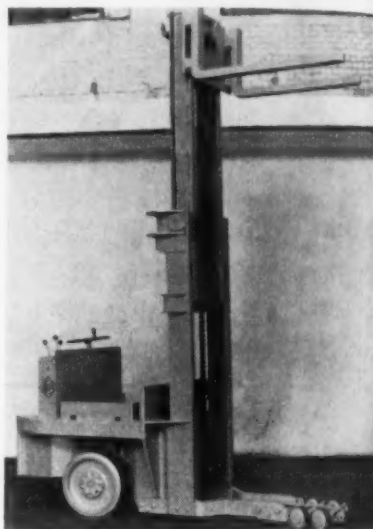
arms open from 24 to 95 in. The clamp is not detachable, but the clamp arms are interchangeable with different types of arms. *Clark Equipment Co.*

For more data insert No. 35 on postcard, p. 12.

Electric-Power Truck

Combines low truck weight with relatively high load capacity.

The basic truck is similar to that of Elwell-Parker's high-lift platform trucks, with the load supporting member being attached to the elevating truck mechanism. In



place of a platform, two reinforced alloy steel arms or forks extend forward the usual length of a platform. The forward wheels are 6½ in. diam and the arms in lowered position come outside and nearly flush with the top of the wheels. This arrangement provides for low underclearance in various type skids. For high tiering the truck has a fork with tines that come below the top level of the wheels. Capacities range from 4000 to 10,000 lb. *Elwell-Parker Electric Co.*

For more data insert No. 36 on postcard, p. 12.

Industrial Hose Reels

A remotely operated reel that contains no springs or motor.

To use, the hose is pulled out from the reel to any desired length and the pressure turned on. To rewind, the hose is simply pushed back into the container, which revolves by the action of the return-



Enduro®

TAKES A "BITE" OUT OF HIGH MACHINING COSTS

- ENDURO Stainless Steel takes a shine to dentists.

In dental hand-pieces—precisely machined from ENDURO forgings—it retains its bright shining lustre despite day-after-day sterilizing. ENDURO instruments are sanitary; free from rust, corrosion and oxidation; tough and long-lasting.

ENDURO responds uniformly to forging—and, as these intricate parts indicate, is readily machinable.

In addition, ENDURO Cold Finished Bars—processed by Republic's Union Drawn Steel Division—provide close tolerances, accuracy of section, uniform soundness and fine surface finish. Two grades are approximately 90% as machinable as Bessemer screw stock. All these qualities combine to hold unit costs and reject losses for stainless steel parts to lowest possible levels.

Republic metallurgists and machining technicians are ready now to help you take large "bites" out of high machining costs through the proper application of ENDURO free-machining bars—both hot rolled and cold drawn. Write:

REPUBLIC STEEL CORPORATION

Alloy Steel Division • Massillon, Ohio

GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N. Y.



FOR TOP STEEL PRODUCTION...keep your scrap moving to the mills. Call your scrap dealer today.

Republic **ENDURO**
FREE - MACHINING
STAINLESS STEEL



Other Republic Products include Carbon and Alloy Steels—Pipe, Sheets, Strip, Plates, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing



**WHEN IT'S
Special BOLTS
and STUDS**
Send your Specifications to
ERIE
37 years' experience in
making special bolts, studs,
nuts for specific job
requirements.

**Specialists in Precision High Quality
CONNECTING ROD BOLTS**

ERIE BOLT & NUT CO.
ERIE, PA.

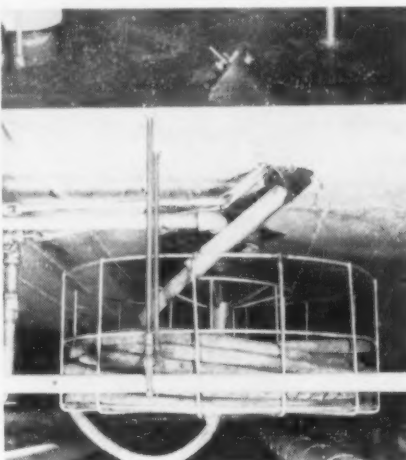
A SUBSIDIARY OF
Barium
STEEL CORPORATION
Specializing in the nation

**STUDS • BOLTS • NUTS • ALLOYS
STAINLESS • CARBON • BRONZE**
REPRESENTATION IN PRINCIPAL CITIES

production ideas

Continued

ing hose pushing against the container wall. This Water Boy hose reel holds the hose in relaxed, loose coils, instead of winding it tightly around a drum. Four plant models



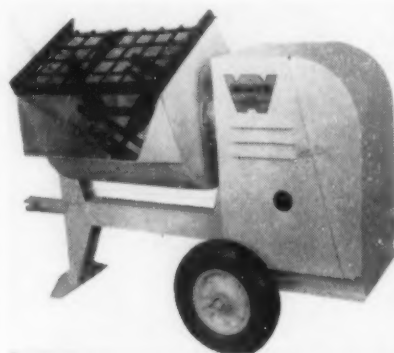
are available: regular wall mounting; ceiling or overhead mounted; through-wall mounted and through-floor mounted (illustrated). Container size controls length and diameter of hose that can be used. Zierden Co.

For more data insert No. 37 on postcard, p. 35.

Hoe-Type Mixer

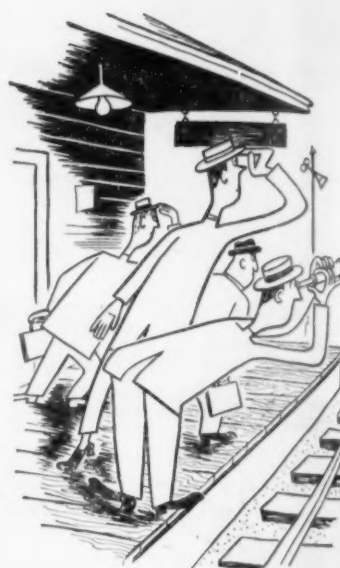
**Adjustable triple action mixing
hoes; safety grating; bag splitter.**

A new Hoe-Boy 3-cu ft capacity mixer features triple-hoe-action and has been designed primarily for inside work right at the point of



application. Available with either gas or electric power, the mixer has self-aligning, self-lubricating shaft bearings, heavy duty electric welded frame, machine cut sprockets and roller chain drive. It is 29 in. wide, with a 36½ in. charging height and 15 in. discharge. Construction Machinery Co.

For more data insert No. 38 on postcard, p. 35.



DON'T GIVE UP!

HALLOWELL

**SHOP EQUIPMENT
IS worth waiting for...**

Don't give up! In spite of shortages, restrictions and stepped-up demand, there's still a good chance of your getting that HALLOWELL Shop Equipment you want.

Just be sure to assign a "D. O." rating to your order, so that we can replace our steel!

And even if you aren't doing defense work, you'll very likely "rate a rating" under the latest N.P.A. Regulation governing Minor Capital Additions and Maintenance, Repair and Operating Supplies.

So we still say: "Don't give up!" You'll find HALLOWELL Shop Equipment's extra strength, extra service, and extra value well worth waiting for!

WRITE FOR LITERATURE

Work Benches
Foreman's Desks
Tool Stands
Platform Trucks

Posture Stools
Posture Chairs
Cabinets
Folding Tables

—SPS—

STANDARD PRESSED STEEL CO.

JENKINTOWN 17, PENNSYLVANIA

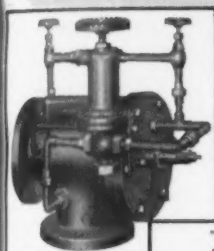
THE IRON AGE

3 Good Ways to Insure



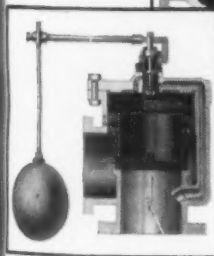
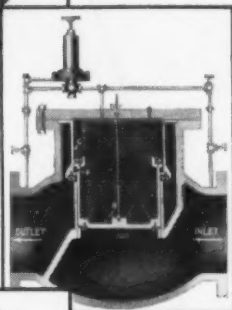
- ★ Longer Service
- ★ Minimum Maintenance
- ★ Greater Dependability

Install GOLDEN-ANDERSON "Cushioned" VALVES



G-A Surge Relief Valve. Bulletin W-2 sent on request.

G-A Water Pressure Reducing Valve. Bulletin W-3 contains the technical information you want.



G-A Cold Water Float Valve. Bulletin W-5 will be of interest to you.

The patented air and water double cushioning feature inherent in all G-A Valves prevents any slam or hammer.

Let our reputable engineers help you with your water control problems.

GOLDEN-ANDERSON
Valve Specialty Company

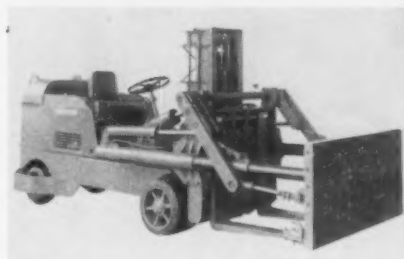
2096 KEENAN BUILDING

PITTSBURGH 22, PA.

Die Handling Accessory

Unloader makes it easy to place a heavy die on press die table.

Handling heavy dies, and transporting them to and from the die table of a press is simplified by a lift truck unloader accessory. The

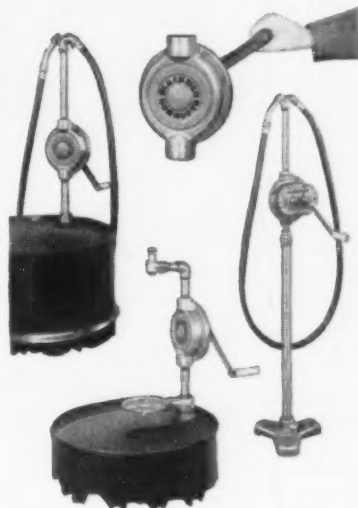


die is lifted and transported with the pusher plate retracted, and is unloaded onto the die table by simply extending the plate. To pick up the die from the table, a chain is passed around the die and linked to the hooks at each side of the pusher plate. When the plate is retracted, the die is pulled onto the lift truck forks. *Towmotor Corp.* For more data insert No. 39 on postcard, p. 35.

Hand Pumps

Changes increase the range of usage in dispensing, refueling, defueling.

The new line of hand pumps, known as Series 210, 404, 414, 828, and 807, is available in models as pump only; with suction and delivery pipes for drums and skid



tanks; with return drip-pan for barrel mounting; with refueling hose and nozzle; with floor stand for underground tanks; with brackets for wall or foot mounting; with locking device; and with



**WHEN IT'S
Special BOLTS
and STUDS**

Send your Specifications to

ERIE

37 years' experience in making special bolts, studs, nuts for specific job requirements.

Send your blueprints to

ERIE BOLT & NUT CO.
ERIE, PA.

A SUBSIDIARY OF
Barium
STEEL CORPORATION
Steelwright to the Nation

STUDS • BOLTS • NUTS • ALLOYS
STAINLESS • CARBON • BRONZE
REPRESENTATION IN PRINCIPAL CITIES

FOR
GREATER SECURITY
FASTEN FAST WITH
CLARK FASTENERS

CLARK
QUALITY INDUSTRIAL FASTENERS SINCE 1854

They work easy...
hold fast and firm.
Their dependability
has been a recogniz-
ed characteristic of
CLARK FASTEN-
ERS for close to a
Century.

6-L-2 c

CLARK BROS BOLT CO.
MILDALE, CONN.

BOLTS • NUTS • RIVETS • SCREWS

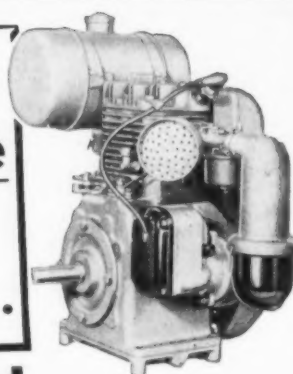


Gain More Power Advantage for Your 3 to 6 hp. Units...

Presented here are a few of the basic facts why Wisconsin Heavy-Duty Air-Cooled Engines offer important advantages to the user of power-driven equipment that has to deliver dependable on-the-job service:

1. Rotary type high tension magneto, with impulse coupling, mounted on outside of engine... operates as an entirely independent unit that can be serviced or replaced in a few minutes.
2. Self-cleaning tapered roller bearings at both ends of the crankshaft... will withstand side-pull or end-thrust without danger to bearings.
3. Maximum torque at usable speeds... most desirable on equipment that really has to go to work.

Your Wisconsin Engine distributor or dealer will be glad to co-operate with you in adapting Wisconsin Engines to your requirements. Write for detailed data.



Condensed Specifications

| Engines | 4-Cycle Single Cylinder | |
|---------------------------------|-------------------------|-----------|
| | Model ABN | Model AKN |
| Bore..... | 2 1/2" | 2 7/8" |
| Stroke..... | 2 3/4" | 2 3/4" |
| Piston Displ. (Cu. In.)..... | 13.5 | 17.8 |
| HORSEPOWER | | |
| 1800 R.P.M..... | 2.5 | 3.6 |
| 2200 R.P.M..... | 3.1 | 4.5 |
| 2600 R.P.M..... | 3.7 | 5.3 |
| 3000 R.P.M..... | 4.2 | 5.9 |
| 3600 R.P.M..... | 4.6 | 6.2 |
| No. of Piston Rings..... | 4 | |
| Fuel Tank Cap..... | 1 Gal. | |
| Weight, lbs..... | Net | Crated |
| Standard Engine..... | 76 | 89 |



WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

production ideas

Continued

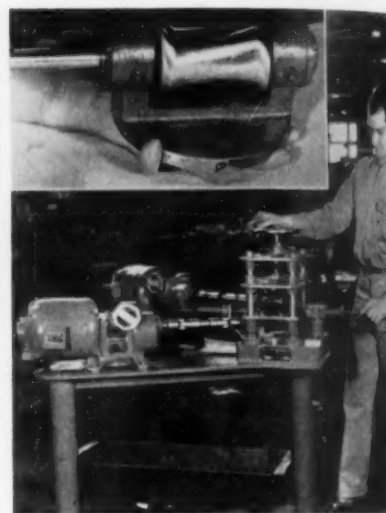
changes of accessories for most combinations of the models. Pumps are designed in five series of 7, 10, 14 and 28 gpm capacity. *Blackmer Pump Co.*

For more data insert No. 40 on postcard, p. 35.

Rotary Straightener

For precision straightening of round material, 1/16 to 3/16 in. OD.

Known as the No. 000 Size 2x2 universal straightener, the machine features individual roll drive from



variable speed motors. The roll yokes are made from a heavy one-piece casting equipped with Timken tapered roller bearings. *Medart Co.*

For more data insert No. 41 on postcard, p. 35.

Tote Boxes

Permit fast economical supply of component parts on production line.

Transfer time between storage bin and production line can be reduced or eliminated through use of the improved Nestier tote boxes. They can be used for inter-plant parts handling, requiring one-sixth the space for return of empties as when loaded. In tiered position, Nestiers can be loaded from one end as parts are withdrawn from the other. Made of heavy, stamped, 18 gage steel, they measure 17 1/2 in. long x 9 1/4 in. wide, with inside depth of 5 1/2 in.. Fifty units can be nested in a 5-ft stack. *Charles William Doepke Co.*

For more data insert No. 42 on postcard, p. 35.

Resume Your Reading on Page 39

as
continued
or most
Pumps
of 7, 10,
lackmer
ard, p. 35.

of
5 in. OD.
Size 2x2
machine
ve from



The roll
avy one-
Timken
art Co.
ard, p. 35.

ly of
tion line.
storage
a be re-
a use of
boxes.

er-plant
ne-sixth
opies as
osition.
om one
n from
tamped,
re 17 1/2
n inside
its can
Charles

ard, p. 35.
age 39

N AGE

IRON AGE *markets and prices*

*market
briefs
and
bulletins*

controls for Canada—Shortages and rearmament are pushing controls into the Canadian economy. A CMP on imports of steel, aluminum, and copper from the United States will become effective on July 1. The importer will be required to apply for and show distribution of material. The CMP will be confined solely to defense and defense-supporting needs for the present. An NPA representative is expected to be stationed in Ottawa to oversee allocations. Canada has already submitted total requirements to Washington. Steel needs were placed at about 1,250,000 tons for 1951.

no pig—Tinplate producers hear they will not be given pig tin in the third quarter to compensate for metal used in producing for export program. The industry received extra tin for this purpose in second quarter. Thus less tin will be available for domestic tinplate production in third quarter.

structural shortage—One eastern fabricator now reports his deliveries on non-DO rated structural steel are extended to 19 months. Another reports 12 months. A shortage of material is at the root of these extended deliveries. Concrete reinforcing bars are in better supply and can be obtained in about 6 months.

shell cases—The General Services Administration has been instructed by the Munitions Board to turn over to the Army the former Riverbank aluminum plant. Already stripped of most of its aluminum equipment, the plant will be converted to manufacture of steel shell cases.

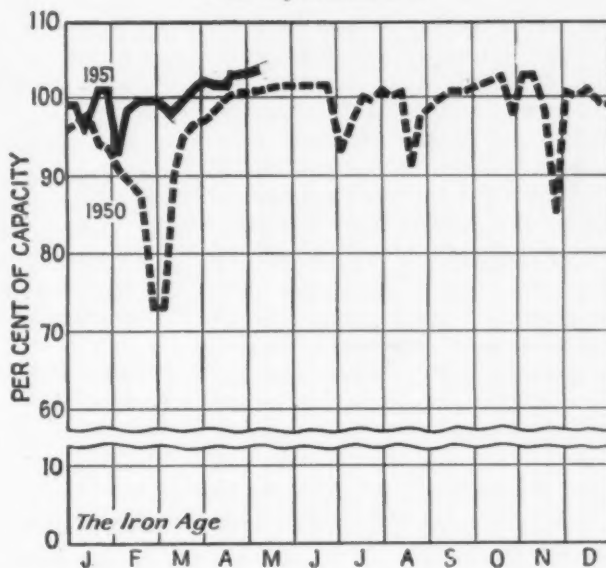
high sulfur steels—Lack of high sulfur steels is reported slowing output of parts. In some instances damage to automatic screw machines has been reported. Even assuming low sulfur steels can be used in place of Bessemer screw machine steels, three machines may be needed to do the job where only two were previously required.

PA's report—Defense orders have not increased rapidly enough to balance sagging civilian business, according to the April report of the National Assn. of Purchasing Agents. PA's are holding most buying commitments to 90 days.

move pool orders—Four new machine tool orders, totaling more than \$12 million, have been approved by the General Services Administration, bringing the overall pool total to almost \$100 million. Orders approved this week were: Bullard Co., Bridgeport, \$3,106,800; New Britain Machine Co., New Britain, \$1,945,000; Giddings & Lewis Machine Tool Co., Fond Du Lac, \$4,788,675; Niles Tool Works Co., (Division of Baldwin-Lima-Hamilton Corp.) \$2,539,950.

no, thanks—Cold finishers have received a shot in the arm from the farm equipment program. It had been expected they would receive a fixed tonnage program similar to warehouses. The figure to be guaranteed was 90 pct of average monthly shipments during the first 9 months of 1950. But after some pencil work they decided they would do better by passing on DO's and getting free allotments. They turned the program down.

Steel Operations †



District Operating Rates—Per Cent of Capacity †

| Week of | Pittsburgh | Chicago | Youngstown | Philadelphia | West | Buffalo | Cleveland | Detroit | Wheeling | South | Ohio River | *St. Louis | East | Aggregate |
|---------|------------|---------|------------|--------------|-------|---------|-----------|---------|----------|-------|------------|------------|-------|-----------|
| Apr. 22 | 100.0 | 107.5 | 95.0 | 100.0 | 107.0 | 104.0 | 97.0* | 105.0* | 100.0 | 96.0 | 94.0 | 97.2* | 98.0 | 103.0 |
| Apr. 29 | 100.0 | 108.5 | 96.0 | 100.5 | 101.9 | 104.0 | 100.0 | 106.0 | 101.0 | 100.0 | 97.0 | 92.7 | 119.2 | 104.0 |

* Revised.

† Beginning Jan. 1, 1951, operations are based on annual capacity of 104,229,650 net tons.

May 3, 1951

nonferrous metals

outlook and
market activities

NONFERROUS METALS PRICES

| | Apr. 25 | Apr. 26 | Apr. 27 | Apr. 28 | Apr. 30 | May 1 |
|----------------------------|---------|---------|---------|---------|---------|---------|
| Copper, electro, Conn.... | 24.50 | 24.50 | 24.20 | 24.20 | 24.50 | 24.50 |
| Copper, Lake delivered.. | 24.625 | 24.625 | 24.625 | 24.625 | 24.625 | 24.625 |
| Tin, Straits, New York.... | \$1.42 | \$1.42 | \$1.42 | | \$1.42 | \$1.42* |
| Zinc, East St. Louis | 17.50 | 17.50 | 17.50 | 17.50 | 17.50 | 17.50 |
| Lead, St. Louis | 16.80 | 16.80 | 16.80 | 16.80 | 16.80 | 16.80 |

Note: Quotations are going prices.

*Tentative.



by R. Hatschek

Copper Price?—It has been reported that the United States and Chilean governments have come to an agreement whereby the U. S. would pay 3¢ per lb more for Chile's copper. The Chilean Minister of Economy states that the terms of the new agreement are highly satisfactory.

It is not yet clear who will pay the additional 3¢. It may be paid in the form of a government subsidy or it might be absorbed by industry or it might even be passed on to the eventual consumer. A concurrent possibility is that the extra 3¢ will be split between government and industry.

Tax Suspension Approved—At any rate, copper consumers will probably not have to pay the 2¢ per lb import duty much longer. Both houses of Congress have approved the suspension provided the price remains in excess of 24¢ per lb. However, the bill has hit a snag which will probably delay its arrival on the President's desk for his signature.

The snag is in the form of a slightly revised termination date on the bill and a controversial rider the Senate tacked onto the bill which the House refuses to okay. The rider has nothing to do with the copper tariff.

Rumors Rampant—As the

month of April came to a close, rumors were heard to the effect that a specific price list for nonferrous metal scrap would be issued by the Office of Price Stabilization on May 1. At press time, this rumor lacks confirmation from Washington, but anything is possible.

Copper for spot delivery in April was bringing top prices but no future sales were to be made. Late in the month one dealer reported that he could not get any orders for May delivery of copper. Junk collectors, remembering the recent drops in the waste paper market, are trying to unload their metals now and the absence of May orders for copper is putting scrap dealers on the spot.

Lead Prices, Too—Some consumers have recently paid prices equivalent, at New York, to 22¢ to 22½¢ per lb for lead originat-

ing in Mexico and Australia. Offers have gone as high as 26¢ and probably even more from others who are getting desperate.

One lead fabricator has been accused of playing favorites when he bills material on the 18½¢ foreign price—the real story is that he couldn't get any metal at 17¢. Rumor has it that another firm, a lead supplier, will bring pressure to bear for an increase in the domestic lead price.

Aluminum Tighter—Ingot makers report that lack of raw materials is really causing trouble. If they had the scrap they could sell all the ingot they could produce. A Philadelphia scrap dealer stated that he would pay 20¢ per lb for any aluminum he could get and make money on the deal.

Request More Zinc—Plant shutdowns and labor lay-offs in the dry cell battery industry are blamed on military cutbacks and restrictions by an industry advisory committee. The manufacturers asked National Production Authority for more relief from the zinc cutbacks. NPA had previously granted an increase from 80 pct to 100 pct of the base but the battery makers claim that orders for dry cells under DO 97 chewed up the increase.

MONTHLY AVERAGE PRICES

The average prices of the major nonferrous metals in April based on quotations appearing in THE IRON AGE, were as follows:

| | Cents Per Pound |
|---|--------------------|
| Electrolytic copper, Conn. Valley | 24.50 |
| Lake copper, delivered | 25.625 |
| Straits tin, New York | \$1.4583 |
| Zinc, East St. Louis | 17.50 |
| Zinc, New York | 18.248 |
| Lead, St. Louis | 16.80 |
| Lead, New York | 17.00 |